CLASS 198, CONVEYORS: POWER-DRIVEN

SECTION I - CLASS DEFINITION

GENERAL STATEMENT OF CLASS SUBJECT MATTER

A power-driven conveyor is an assemblage of elements for moving a load over a predetermined path or path section. The assemblage generally includes a single frame structure mounting a power-driven load-advancing means which is used to advance the load over the predetermined path.

The load-advancing means may comprise either a single load-advancing element or a group of like members acting as a single load-advancing device. A group of like members may be considered as acting as a single unit if they coact one with the other to effect movement of the load, where said coaction occurs along the entire length of said path or path section. Some other criteria which generally indicate that a group of like members is acting as a single unit are: a common frame structure supporting all the members; or a drive means for all the members, with the elements being driven at the same speed or over the same speed range. The above are merely certain parameters that most groups acting as a single unit exhibit. As with any rule or definition, there will be exceptions.

See the Glossary, below, for clarification and limitation of the concepts of the terms Chute and Condition Responsive, applying to the manner in which they are encountered in this class (193).

SECTION II - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS

ORGANIZATION OF THE CLASS

Perusal of the first-order (capitalized) titles of the schedule will show that the class is composed of a relatively few major collections of subclasses. Search fields are provided for special-purpose and particular-function conveyors as well as for particular combinations of conveyor structure and subcombinations of conveyor structure. Generally, in order of superiority, the major collections provide for the following search fields.

1. Conveyor on a vehicle (subclasses 300+) or for people (subclasses 321+).

2. Selective conveyor (subclasses 348+).

3. Conveyors handling a specific article or specific group of articles, including: (a) a conveyor “orienting” an article (subclasses 667+); or (b) a system of conveyors grouping plural articles into a group (subclasses 418+); or (c) a system of conveyors conveying articles as a stream wherein articles are successively arranges (subclasses 434+); or (d) a system of conveyors conveying articles each as a separate article (subclasses 463+).

4. Special conveyor or one having special features (subclasses 339+, 493+, 502.1, 506+, and 347).

5. Arrangement of plural conveyors of which (a) one conveyor is not power-driven (subclasses 523+); and (b) all conveyors are power-driven (subclasses 570+).

6. Methods of conveying (subclass 617).

7. Conveyor, per se, including subcombinations (subclasses 618+).

8. Stopping of a conveyor (subclasses 854+).

9.The frame or supporting structure for a conveyor (subclasses 860.1).

In some of the collections summarized above (step 3), the disclosed intent of the claimed apparatus is significant and important. Mechanisms that are apparently similar in structure are used for different functions by modifying the arrangement or providing a different adjunct to the structure.

See Subclass References to the Current Class, below, for subclasses with apparently similar structure used for different functions.

Subclass 584 of this class (198) should be limited to a conveying system composed of a plurality of sections which are joined to each other by means allowing ready connection or disconnection of the sections, said means further allowing the sections, to partake of a pivotal motion relative to each other. Examples of the type of patent which will be placed here are nonambulant articulated trains or movable articulated trains which are connected to a stationary element in the system.

LINE BETWEEN CLASS 198, CLASS 193, CLASS 226, CLASS 242, CLASS 414, AND CLASS 72

The conveyor, per se, is in Class 198. As between Class 193, Conveyors, Chutes, Skids, Guides, and Ways; Class 198, Conveyors: Power-Driven; Class 226,

Advancing Material of Indeterminate Length; Class 242, Winding, Tensioning, or Guiding; Class 294, Handling: Hand and Hoist-Line Implements; Class 414, Material or Article Handling, Class 72 is superior.

However, in the case of a subcombination for structure or process wherein it is not clear from the claims whether handling or deforming is involved, a reasonable interpretation of the total disclosure will determine whether classification should be in Class 72, as a deforming subcombination. For example, a claim reciting a "roller pair" may be considered as a feeding subcombination in the absence of disclosure of deformation. On the other hand, "a configured roller" will usually be a deforming device unless it is feeding a correspondingly configured workpiece. A claimed "pinch-roll couple" may be disclosed (a) with many details showing its effectiveness as a feeder, or (b) may be sparsely described as a deforming device and still be clearly a deformer.

A patent including a claim involving both metal deforming and work handling is classified in Class 72, unless both the following criteria are met (a) there is no claim limited to deforming, per se, and (b)the claims to handling and deforming recite deforming by name only. Search subclasses 137.1+ for the combination of a conveyor with provision to load or unload a buoyant vehicle.

LINE BETWEEN CLASS 241, CLASS 198, AND CLASS 83

See Class 241, Solid Material Comminution or Disintegration, especially the various feeding and discharging subclasses, for comminutors combined with power conveyors. See the Class 241 main class definition, "Material Handling, Excavating, Distributing, Harvesting" for a statement of the line. However, when such instrumentality is set forth with structural specificity, the claimed congregation of elements is properly placed with the work modifying instrumentality (Class 83). For example: A claim reciting structurally defined work-handling means (not claimed as synchronized with "work-modifying means", or "tool", or "cutter", or "punch", or "knife", etc.) is properly placed in Class 198, on the basis of the work-handling means. A claim reciting a power conveyor and, for instance, a work station including "a reciprocating tool", or "a tapered tool", or "a round cutter", or a "rotary cutter", etc., is properly placed in the class of the specified tool set forth.

In addition, Class 83, Cutting, receives patents for classification therein which claim a cutting tool (of the type provided for in Class 83) synchronized with, or in power transmitting relation with, a work handling means, regardless of whether such tool is claimed significantly or merely nominally.

See References to Other Classes, for various fields of search for devices related to those in this class (198)

SECTION III - SUBCLASS REFERENCES TO THE CURRENT CLASS

SEE OR SEARCH THIS CLASS, SUBCLASS:

301, for a control means responsive to a sensing means when carried by a ground vehicle.

323, for a control means responsive to a sensing means when part of a people-carrier.

326+, particularly for an endlessly orbiting conveyor, either as one belt or chain or as a plurality of connected components when used as a people-carrier.

341, for a control means responsive to a sensing means when part of a working station.

368+, for a control means responsive to a sensing means when part of a selective conveyor system.

375+, 384+, 393, 397, 404+, and 408 for an endlessly orbiting conveyor, either as one belt or chain or as a plurality of connected components when used for orienting articles.

376+, for a control means responsive to a sensing means when part of an orienting mechanism, and particularly for a reciprocating or oscillating conveyor when part of a conveyor section.

395, or 401 for a control means responsive to a sensing means when part of an orienting mechanism.

418+, most of the subclasses for a control means responsive to a sensing means when used to control the operation of a group-forming mechanism control of this operation is so much a part of grouping that the control subclasses have not been specifically set out.

429+, particularly for a reciprocating or oscillating conveyor when used to form a group of articles;

437, for a control means responsive to a sensing means when the function is the formation or arrangement of a stream of items.

440+, and 449+, particularly for an endlessly orbiting conveyor, either as one belt or chain or as a plurality of connected components when used in a stream-moving conveyor system.

464.1, for a control means responsive to a sensing means when the function is to separate or convey a particular article.

467.1, particularly for a rotating screw or helix when used to separate or convey a particular article;

468.01+, particularly for a reciprocating or oscillating conveyor when used to separate or convey a particular article;

469.1, particularly for an endlessly orbiting conveyor, either as one belt or chain or as a plurality of connected components when used to separate or convey a particular article.

502+, for a control means responsive to a sensing means when responsive to weight variations.

507, for a control means responsive to a sensing means when part of structure to collect load from the ground.

513, particularly for a rotating screw or helix when part of a structure to collect load from the ground;

515, particularly for an endlessly orbiting conveyor, either as one belt or chain or as a plurality of connected components when part of a structure to collect load from the ground.

523+, for power-driven conveyors combined with gravity conveyors.

524, for a control means responsive to a sensing means when part of a system having a non-driven conveyor.

545, particularly for an endlessly orbiting conveyor, either as one belt or chain or as a plurality of connected components when part of a system having a nonpower-driven conveyor; and particularly for a rotating screw or helix when part of a system having a nonpower-driven conveyor.

547, particularly for an endlessly orbiting conveyor, either as one belt or chain or as a plurality of connected components when part of a system having a nonpower-driven conveyor

548, 550.6, 550.10, particularly for a rotating screw or helix when part of a system having a non-power-driven conveyor.

571+, for a control means responsive to a sensing means when part of a conveyor system.

597, particularly for a reciprocating or oscillating conveyor when part of a conveyor system;

606+, particularly for an endlessly orbiting conveyor, either as one belt or chain or as a plurality of connected components when part of a conveyor system.

626+, 725+, 793+, and 804+, particularly for an endlessly orbiting conveyor, either as one belt or chain or as a plurality of connected components when part of a conveyor section.

634, 639, 718, 751, 794, and 810.1+, for a control means responsive to a sensing means when part of a conveyor section each noted subclass number is applicable to a different kind of conveyor section.

657+, particularly for a rotating screw or helix when part of a conveyor section.

750.1+, particularly for a reciprocating or oscillating conveyor when part of a conveyor section.

855, for a control means responsive to a sensing means when part of a conveyor that is not specified as to the kind of conveyor under consideration.

SECTION IV - REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

14, Bridges, subclass 70, for endless-conveyor gangplanks.

34, Drying and Gas or Vapor Contact With Solids, for conveyors claimed in combination with added means to promote a drying action or contact of gases or vapors with solids conveyed, and see subclass 203, Notes (2), (3) and (4).

37, Excavating, for conveyors particularly adapted for digging in the earth. If no actual digging element, as teeth, wheel, plow, scoop, or the like, is claimed, and if the conveyor is not particularly adapted to trench, it is classified in this class (198). If other operations are included, as a melting snow, classification is in Class 37. If the presence of a wagon to be loaded is essential to the intended operation of the device, classification is in Class 414, Material or Article Handling.

53, Package Making, for conveyor or article handling mechanisms combined with packaging machines.

56, Harvesters, subclasses 158+ for conveyors limited to use on harvesters. For excavating and loading machines of the type having a scoop or a rake delivering to an endless or rotary carrier, see Class 56, subclasses 344+. The line between conveyors of this type and harvesters of the raking or loading type is that where tines, prongs, or the like are the raking means and the apparatus is particularly designed for raking up loose material while moving across a field, or if it can be so used without modifica-

tion, classification is in harvesters. If the conveyor alone and not the raking conveyor is claimed, classification is in the conveyor class.

72, Metal Deforming, subclasses 199+, and in particular subclasses 227+ and 250+, for a rolling mill having a conveyor to carry work to the rolls or to manipulate or guide the work for proper shaping.

83, Cutting. The line between Class 198 and Class 83, Cutting, is in concert with the general line which distinguishes Class 198 from other classes having a greater combination. That is, the claimed recitation of a power-driven conveyor (or a power-driven work-feeding means) in combination with a cutting instrumentality, in name only or in nominal terms, with respect to which the work feed means may move work, will not of itself exclude original placement of the patent in Class 198. (Also see Lines With Other Classes, above for the line between Class 83, and this class - 198)

193, Conveyors, Chutes, Skids, Guides, and Ways, for gravity conveyors. Power-driven conveyors combined with gravity conveyors are classified in this class (198). See Subclass References to the Current Class.

73, Measuring and Testing, subclasses 863+ for an apparatus for sampling material being conveyed.

99, Foods and Beverages: Apparatus, subclasses 360 through 366 for a conveyor designed to receive food, a food article or a beverage containing receptacle, and having a heat generator, a heat exchanger, other means physically effecting the food or beverage during the conveying, or an enclosure or tank having more than enough structure for the operation of the conveyor.

100, Presses, subclass 167, for plural stage roll-type presses, not elsewhere provided for and having a conveyor between stages.

104, Railways, for tracks or road beds with endless traction means which are detachably connected to or which push the carrier or car, and subclass 25, for endless railways and moving sidewalks combined with an endless railway.

105, Railway Rolling Stock, subclass 48.1, for conveyors combined with railway locomotives to convey solid fuels to their combustion chambers.

114, Ships, subclass 366 and 375 for apparatus in the form of chutes or tracks for launching life craft from ships.

118, Coating Apparatus, appropriate subclasses, for coating apparatus having means to convey the work.

119, Animal Husbandry, subclasses 52.1+, for the combinations of a source of supply, which is disclosed as being feed for creatures of that class, a conveyor for removing material therefrom, and a receiver in the form of a receptacle (trough, bank, etc.) or surface in or upon which the feed is placed for consumption.

165, Heat Exchange, subclass 120, for heat exchanger with an impeller or conveyor for moving material therethrough.

171, Unearthing Plants or Buried Objects, for conveyors which (1) are used to dig, convey, and separate from the earth desired objects; or (2) are combined with digging or excavating means and function to separate from the soil flowing from the digging or excavating means the desired plant or buried object; or (3) are combined with an unearthing device and function merely to feed material to or from such device.

186, Merchandising, subclasses 38+ and 52+ for dining and store service conveyors, respectively.

202, Distillation, subclasses 23+, 117+, 253, and 262+, for distillation apparatus including conveying means.

204, Chemistry: Electrical and Wave Energy, subclasses 198+, for conveying means specialized for electrolytic devices.

209, Classifying, Separating, and Assorting Solids, for a conveying system for separating conveyed articles employing means to sense variations in size or other physical characteristics of the article.

210, Liquid Purification or Separation, subclasses 400+, for belt-type filters and subclasses 523+, for gravitational separators having a mechanical mover constituent.

226, Advancing Material of Indeterminate Length, provides the search for methods of and apparatus for feeding material without utilizing the leading or trailing ends thereof to effect movement of the material.

266, Metallurgical Apparatus, for apparatus for treating solid metal. Cooling beds in which a bar of metal is conveyed while cooling are classified in Class 198, even though the bar may be rotated while being conveyed to keep it straight.

270, Sheet-Material Associating, for sheet-material associating conveying and feeding.

271, Sheet Feeding or Delivering, appropriate subclasses, for a machine having one or more of the following functions: A. Separating a sheet from a stack of such sheets and conveying the separated sheet, usually to a station whereat an operation (e.g., printing, cutting, etc.) is to be performed, B. Conveying a sheet, usually from a station whereat an operation has been performed, to a receiver whereat the sheet is stacked together with other such sheets, C. Conveying a sheet (e.g., from a stack to an operation), and concurrently performing an operation-related function (e.g., aligning the conveyed sheet relative to the operation station, interrupting the feed in response to absence or excess of sheets, intermittently moving a sheet relative to an operation station, etc.). Also see subclass 213, (1) Note for a particular combination of conveyor on which a plurality of sheets is stacked and subsequently moved as a stack, and for a line note distinguishing structure proper for Class 271 and this class (198).

406, Conveyors: Fluid Current, for the combination of conveying mechanisms, of the type classified in Class 198, and pneumatic conveyors.

414, Material or Article Handling, for instruments and mechanical methods for placing or displacing particular articles in a particular manner or with reference to a particular support, for loading or unloading vehicles with materials or objects in general, charging or discharging furnaces, ovens, bins or other containers, stacking or piling articles or materials, also combination of general types of carriers or forwarding mechanisms, which types, per se, are separately classified elsewhere, and general types of elevators, cranes or hoists when associated with special means for handling the load to place it on the carrier or remove it therefrom.

415, Rotary Kinetic Fluid Motors or Pumps, subclasses 7+, for impellers acting in an unconfined or undirected fluid medium.

483, Tool Changing, generally for a process or apparatus including a tool transfer means combined with either a tool support or storage means.

221, Article Dispensing, subclasses 76+ for endless conveyors used in dispensing environments.

312, Supports: Cabinet Structure, for endless conveyors used in dispensing environments; see subclass 97, if the conveyor moves the load to a door for manual removal from within a cabinet.

211, Supports: Racks, for endless conveyors used in dispensing environments; subclasses 121+ for an endless support rack not claiming cabinet structure or dispensing (e.g., endless filing system, etc.).

SECTION V - GLOSSARY

The following explanations represent an attempt to clarify and limit the concepts of certain conveyor art terms, the first two applying to the manner in which they are encountered in Class 193, Conveyors, Chutes, Skids, Guides, and Ways, subclasses 44+.

CHUTE

A structure capable of guiding a gravity induced flow of material therethrough or thereon. While a chute is more often than not an inclined passageway in the form of a trough, it occasionally takes the form of a conduit. Inasmuch as a chute with a gate, especially a chute in the form of a conduit, presents structure closely related to that of a hopper, such structures are distinguished on the basis of whether a storage concept exists (hopper) or does not exist (chute). A receptacle positioned in such manner as to impart the property of gravity induced flow to material contained therein, and, therefore, to be a source of supply to components “downstream” thereof. While it is not essential that the contained material be “stored” for a finite period of time, there should be a concept of supporting it for an interval longer than that required for mere passage therethrough. A hopper has an inlet and an outlet, although the inlet may be merely an open side (of the receptacle). The outlet, however, will have a provision whereby passage of the contents can be controlled (e.g., possibly a conveyor). The provision of chutelike structure integral with the hopper, whereby material is guided into the inlet or out of the outlet, should not be considered as constituting a separate element. (This is in line with what appears to be a basic difference between chutes and hoppers; namely, a chute guides whereas a hopper stores and may guide). “Gravity-induced” is not intended to be construed to exclude those nondriven conveyors which utilize mechanical means (e.g., a vibrator) to start to maintain flow (i.e., bridge breaking).

CONDITION RESPONSIVE

Apparatus having (1) means to sense a condition of the environment surrounding the conveyor and means responsive to said sensing means to cause a change in the operating condition of the conveyor, or (2) means to

sense a particular condition which may or may not exist relative to the conveyor itself, such as speed, overload, motor temperature, etc., and means responsive to said sensing means to act to change the operating condition of the conveyor.

SUBCLASSES

300 This subclass is indented under the class definition. Apparatus wherein the load conveyor or conveyor system is wholly supported upon a carrier having wheels, treads, skids, or other means permitting its free movement on the ground or a floor.

(1) Note. The words "wholly supported upon a carrier having wheels, skids, . . ." in the definition of this subclass excludes a conveyor or conveying system partially sustained by such a carrier or a plurality of such carriers and partially sustained by any other support except the ground or a floor. Thus the subclass includes a conveyor support frame mounted on a carrier of the type described so that one end of said frame can slide on the ground, but the subclass does not include a conveyor partially supported on such a carrier and partially supported by (1) fixed ground supports such as stanchions or (2) a mobile carrier of a different type, such as a track traversing vehicle.

(2) Note. Assignment of a patent in this subclass or its indents does not require a claim that a conveyor is mounted on specific ground vehicle type supports such as wheels, skids, or caterpillar tracks, but may be based on any claim language indicating that a conveyor is freely movable on the ground, e.g., by claim limitations stating that a conveyor is mounted on a "carriage," "truck," "slidable support" or "movable support means," where such terms are clearly supported by the disclosure of a ground vehicle type support for a conveyor. However, a conveyor defined only as being "portable" has not been included here.

SEE OR SEARCH THIS CLASS, SUBCLASS:

618+, for structure of conveyors not carried by a vehicle.

SEE OR SEARCH CLASS:

37, Excavating, appropriate subclasses, for conveyors mounted on mobile excavation apparatus.

301 This subclass is indented under subclass 300. Apparatus having separate means which senses the occurrence of a condition or a change in condition and in response thereto acts to start, stop, or change the manner of operation of either the load conveyor or its carrier.

302 This subclass is indented under subclass 300. Apparatus including means for lifting a wheel of the carrier from its supporting surface, e.g., to transfer the weight of the apparatus to a fixed support leg while the conveyor is operated at a selected site.

SEE OR SEARCH CLASS:

172, Earth Working, subclasses 240+, for earth working vehicle having ground support engageable with ground for transport only.

303 This subclass is indented under subclass 300. Apparatus wherein at least three separate carriages having wheels or tracks are joined together to support the conveyor assembly and are independently movable relative to each other.

SEE OR SEARCH CLASS:

239, Fluid Sprinkling, Spraying, and Diffusing, subclasses 726+, for sprinkling apparatus carried on a train of vehicles.

304 This subclass is indented under subclass 300. Apparatus in which the carrier includes means for controlling its direction of travel.

SEE OR SEARCH THIS CLASS, SUBCLASS:

303, for a conveyor assembly carried by a dirigible train of vehicles.

SEE OR SEARCH CLASS:

172, Earth Working, subclass 799, 832 and 834, for steerable wheel on an earth working vehicle.

305, Wheel Substitute for Land Vehicles, subclass 44, for steerable vehicle tracks or treads.

305 This subclass is indented under subclass 304. Apparatus including flexible means connected to a reel mounted on the carrier, the free end of said flexible means being anchored at a selected point and the reel then rotated to thereby pull the carrier toward said point.

306 This subclass is indented under subclass 300. Apparatus including at least one carrier support wheel securable in two ground engaging positions disposed 90o a part relative to the carrier frame, thus permitting selective travel of the carrier in either one of two perpendicular directions merely by shifting the position of said wheel.

(1) Note. This subclass does not include a conveyor supported on a vehicle equipped with a caster wheel that is not lockable in two positions spaced 90° apart.

SEE OR SEARCH CLASS:

172, Earth Working, subclass 507, for ground support adjustably mounted on earth working vehicle.

239, Fluid Sprinkling, Spraying, and Diffusing, subclass 742, for sprinkling apparatus carried on a train of vehicles with adjustable wheels permitting travel of the train in the direction of its length or in the direction normal to its length.

307.1 Bucket conveyor:

This subclass is indented under subclass 300. Apparatus wherein the conveyor includes at least one holder having a pocket formed thereon for retaining a load.

308.1 Shovel or tine pushable under load:

This subclass is indented under subclass 300. Apparatus including lifting means, such as a scoop or a row of closely spaced teeth, movable under a load by translation of the carrier or by movement of said means itself, usually for the purpose of transferring the load to another section of the conveyor assembly.

(1) Note. Included here is a vehicle equipped with a ground-engaging ramp having mounted thereon a rotatable arm which gathers ore or other loose material and moves it up said ramp.

309 This subclass is indented under subclass 300. Apparatus wherein the conveyor is supported by a skid or other means readily slidable over a surface.

(1) Note. Included here is a conveyor supported by both a wheel or track equipped vehicle and an element that slides on the ground or a floor.

SEE OR SEARCH THIS CLASS, SUBCLASS:

308.1, for a vehicle carrying a shovel or tines that scoop material from the ground and feed it to a conveyor mounted on the same vehicle.

SEE OR SEARCH CLASS:

172, Earth Working, subclass 80 and 387+, for wheel substitute on an earth working vehicle.

310 This subclass is indented under subclass 300. Apparatus including conveyor drive means operated by motion of a wheel or other support element of the carrier.

SEE OR SEARCH CLASS:

40, Card, Picture, or Sign Exhibiting, subclass 43, for an endless belt used as a display device and actuated from the revolving axle or wheel of a vehicle, and subclass 48, for an endless belt of the same type that is actuated by mechanism which contacts an obstacle located along the track of a vehicle carrying the device.

56, Harvesters, subclass 14.8, for harvester drive train powered by ground engaging wheels.

172, Earth Working, subclasses 105+, for earth working means driven from ground wheel.

239, Fluid Sprinkling, Spraying, and Diffusing, subclass 685, for a rotating scatterer driven from ground wheel.

311 This subclass is indented under subclass 300. Apparatus wherein the load is moved along at least a portion of the conveyor by the force of gravity alone, or including a bin from which material is removed by a conveyor.

312 This subclass is indented under subclass 300. Apparatus including means permitting movement of a conveyor to different working positions or orientations relative to the carrier on which it is mounted.

(1) Note. Included here is a conveyor vertically adjustable relative to ground engaging supports of the carrier vehicle.

SEE OR SEARCH CLASS:
172, Earth Working, subclasses 395+, for earth working tool mounted on a vehicle frame that is vertically adjustable.

313 This subclass is indented under subclass 312. Apparatus wherein a conveyor can be telescoped or swung to a more compact configuration that it has when operating, e.g., to facilitate transporting the conveyors along a road.

314 This subclass is indented under subclass 312. Apparatus including separate conveyors mounted on a single carrier so that they successively convey a load.

315 This subclass is indented under subclass 312. Apparatus including motorized means for moving the conveyor support frame relative to the carrier.

316.1 Fluid-actuated ram:
This subclass is indented under subclass 315. Apparatus wherein the conveyor moving means includes a cylinder and piston mechanism operated by fluid pressure.

(1) Note. Included here is a ram operated by fluid pressure derived from any means, including a manually worked pump.

317 This subclass is indented under subclass 312. Apparatus including a conveyor rotatable to extend in different directions circumferentially of the carrier.

318 This subclass is indented under subclass 312. Apparatus including a conveyor inclinable at different angles relative to the ground.

(1) Note. Not included here as vertically swingable is a conveyor support frame that pivots about the axle of a two-wheeled vehicle in the same way that the drawbar and bed of a two-wheeled trailer pivot about the trailer axle. The support frame of the conveyor must be vertically swingable relative to a supporting frame of the vehicle.

319 This subclass is indented under subclass 318. Apparatus having means for retaining a support platform for a conveyor drive motor in the same position as the conveyor swings to different inclinations.

320 This subclass is indented under subclass 318. Apparatus including flexible means connected to a support frame for the conveyor and to a reel mounted on the carrier, whereby rotation of said reel changes the inclination of said conveyor.

321 This subclass is indented under the class definition. Devices wherein a conveying section is provided with structure which particularizes the section to move people from one location to another. Further included herein are the subcombinations peculiar to such sections, e.g., handrails, guards, etc.

(1) Note. Examples of structure particularizing a section for conveying people are moving steps, conveyors having handrails, conveyors having serrated foot engaging surfaces and entrance or exit comb plates, passenger operated drive control means, etc.

SEE OR SEARCH CLASS:
14, Bridges, subclass 70, for gangways of the endless conveyor type.
104, Railways, subclass 25, for endless railways or moving sidewalks com-

bined with an endless railway. Some of the features indicative of an endless railway are cabs or other passenger enclosures, releasable drivers for the cars, seats, etc.

182, Fire Escape, Ladder, or Scaffold, subclasses 42+, for endless conveyor escapes.

322 This subclass is indented under subclass 321. Device wherein the section is provided with means to regulate the operation of the section, which means effects such regulation in response to an operating instruction which is either originated by a condition sensing means or is introduced into the system by the operator.

(1) Note. Examples of structure to be found herein include passenger controlled conveyors, jam prevention safety circuits, section speed controllers, etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:

854+, for means to drive, start or stop a conveying section, especially subclass 856, for controls responsive to abnormal operating conditions of a conveying section.

323 This subclass is indented under subclass 322. Device wherein a means to sense the operation of the section is provided which originates an operation command to vary the speed of or to stop the section if some condition is sensed which is dangerous or potentially dangerous to either the conveying mechanism or to the passengers moved by the mechanism.

324 This subclass is indented under subclass 321. Device wherein the section is provided with means located at a terminal end of the section to aid in the movement of passengers onto or off of the section.

325 This subclass is indented under subclass 324. Device wherein the means to facilitate entry or exit, includes a platform formed with a plurality of elements which interleaf with grooves formed on the conveying surface to effect or to aid movement of passengers to or from the section.

326 This subclass is indented under subclass 321. Device wherein the section includes a continuous train of moving tread members which are either attached one to the other so as to form a closed loop or are mounted to an interminable belt-like member and which form a moving flight of stairs as they are moved along an inclined surface.

327 This subclass is indented under subclass 326. Device wherein the endless member includes a plurality of pivotally connected tread and riser members which alternate one with the other and wherein the moving flight of stairs is formed by flexing the endless member to displace the risers to a vertical attitude and the treads to a substantially horizontal attitude.

328 This subclass is indented under subclass 326. Device wherein the endless member includes a plurality of articulated steps which are arranged to bend about an axis which is generally normal to the horizontal.

(1) Note. Moving stairways having side-by-side ascending and descending flights formed from the same endless member will be found herein.

329 This subclass is indented under subclass 326. Device wherein the section is provided with means which will take up undesired slack in the endless member or will accommodate for misalignments which occur when such slack is taken up.

330 This subclass is indented under subclass 326. Device wherein the section is provided with means to effect movement of the endless member.

331 This subclass is indented under subclass 330. Device wherein the system is provided with a moving hand supporting and guiding structure and means are provided for moving the steps and the hand support structure in unison.

332 This subclass is indented under subclass 326. Device wherein the section is provided with two guide rail means which simultaneously coact with followers carried by each step to maintain the tread portion of the step in a hori-

zontal attitude as it moves through that portion of its path which constitutes the flight of stairs.

333 This subclass is indented under subclass 326. Device wherein the section includes the specific structural features of the passenger supporting platforms, i.e., the steps, carried by the endless member.

334 This subclass is indented under subclass 321. System wherein the means specialized to handle people includes a) a conveying means or an accessory therefore which is adapted to move at different rates at different points along its path of travel, or b) a system of plural conveying sections which operate at different speeds and which are arranged such that a passenger may move from one section to another.

SEE OR SEARCH THIS CLASS, SUBCLASS:

792, for a conveyor having a zone of varying speed.

335 This subclass is indented under subclass 321. Device wherein a structure is provided which has a moving member adapted to be grasped by the hand of a passenger to steady the passenger while entering, riding on or exiting from the conveying section.

336 This subclass is indented under subclass 335. Device wherein the moving member is a flexible belt and the structure further includes means to take up slack which may develop in the belt.

337 This subclass is indented under subclass 335. Device wherein the moving member is a flexible belt of a specific construction.

338 This subclass is indented under subclass 335. Device preventing the entry of a passenger's hand into an entrance or exit hole formed in a balustrade for the moving member.

339.1 WITH MEANS TO FACILITATE WORKING, TREATING, OR INSPECTING CONVEYED LOAD AT A STATION:

This subclass is indented under the class definition. Apparatus including specialized structure, either part of the conveyor or separate means associated therewith, specifically provided for the purpose of aiding the working, treating, or inspecting of the load by separate means at a station situated along the conveying path.

(1) Note. Included herein is a conveyor having associated therewith claimed means for working or treating a load, where the combination of such means and the conveyor is not classifiable elsewhere on the basis of the working or treating means.

(2) Note. A nominal recitation that a conveyor operates in a machine for performing some work operation, that the load passes through a treating station or that a conveyor is intermittently driven in a working or treating apparatus does not warrant placement of a patent here. Such patens should be classified in other subclasses of this class on the basis of the claimed structure.

(3) Note. Combinations of a conveyor and a treating tank are found in the appropriate treating class such as Class 118, 134 or 204.

340 This subclass is indented under subclass 339.1. Apparatus including indicia or other identification means associated with the conveyed load, or a signalling device associated with either the conveyor or separate work means, which provides an attendant or workman with information regarding operation of the conveyor or handling of the load.

SEE OR SEARCH CLASS:

340, Communications: Electrical, subclasses 500+ for electrical automatic condition responsive indicating systems, especially subclass 676 relating to conveyor belts.

341.01 Condition responsive control of conveyor or station apparatus:

This subclass is indented under subclass 339.1. Subject matter including means for sensing (1) a change in the conveyed load or (2) a change in (a) the mode of operation of the conveyor or (b) the load-working, treating, or inspecting apparatus and in response to the change controlling the conveying of the load or the operation of the conveying system, e.g., means for stopping a conveyor if the load is not properly

positioned at a station for a work operation to be performed thereon.

SEE OR SEARCH THIS CLASS, SUBCLASS:

301, for condition responsive control means for vehicle or conveyor supported by mobile ground engaging means.

SEE OR SEARCH CLASS:

53, Package Making, subclasses 52+, for a package making apparatus having operation control means responsive to a condition of a package or its contents.

341.02 Conveyor displacement controls station apparatus:

This subclass is indented under subclass 341.01. Subject matter wherein the sensing means detects the advancement of the conveyor along the conveying path and the sensing means in response to the advancement actuates a device which controls the apparatus for performing the work operation on the load.

SEE OR SEARCH THIS CLASS, SUBCLASS:

464.3, for a control of a conveyor system responsive to a position of the conveyor.

341.03 Station operation responsive to presence or absence of item:

This subclass is indented under subclass 341.01. Subject matter wherein the sensing means has a characteristic which changes in response to a detection of a property of or the presence or absence of the load being conveyed on the conveyor and in response to the detection actuates a device which controls the apparatus for performing the work operation on the load.

341.04 Item size:

This subclass is indented under subclass 341.03. Subject matter wherein the characteristic being detected is a particular dimension (e.g., length, width, height) of the load on the conveyor.

SEE OR SEARCH THIS CLASS, SUBCLASS:

502.2, for a means for measuring dimensions of the load on the conveyor.

341.05 Item position relative to station position:

This subclass is indented under subclass 341.03. Subject matter wherein the characteristic being detected is one of many possible locations of the load on the conveyor.

SEE OR SEARCH THIS CLASS, SUBCLASS:

502.3, for a means for indicating position of the load.

341.06 Quantity of items:

This subclass is indented under subclass 341.03. Subject matter wherein the characteristic being detected is a specific number of conveyed loads on the conveyor.

341.07 Item presence:

This subclass is indented under subclass 341.03. Subject matter wherein the characteristic being detected is the existence of the loads on the conveyor.

SEE OR SEARCH THIS CLASS, SUBCLASS:

464.2+, for a control of a conveying system responsive to the presence of the load.

341.08 Conveyor responsive to station operation:

This subclass is indented under subclass 341.01. Subject matter wherein the sensing means detects an activity of the load conveying apparatus and in response thereto regulates a movement of the conveyor.

341.09 Speed control:

This subclass is indented under subclass 341.08. Subject matter wherein the station operation controls a rate of movement of the conveyor.

343.1 Load supporting conveyor portion is retarded or stopped with load at station without being disconnected from remainder of continuously moving conveyor:

This subclass is indented under subclass 339.1. Subject matter wherein the load and its respective supporting conveyor portion are caused to

move relative to the remainder of a moving endless or rotary conveyor such that the load advancement relative to the station is halted or slowed.

343.2 Load supporting conveyor portion is movably secured to conveyor drive:
This subclass is indented under subclass 343.1. Subject matter wherein the load supporting means is pivotally or slidably secured to its endless or rotary drive means.

345.1 Means engaging conveyor or load on a conveyor to align load for working:
This subclass is indented under subclass 339.1. Subject matter including separate aligning means, such as a locator pin or clamp, which temporarily engage the conveyor or the load to position said load at the station.

SEE OR SEARCH THIS CLASS, SUBCLASS:
346.1, 346.2, or 346.3 for means which shift a palleted load or the load solely back and forth between the mainline conveyor and the station.

345.2 Means engages conveyor to fix conveyor position relative to station:
This subclass is indented under subclass 345.1. Subject matter wherein at least the conveyor or conveyor portion is engaged by the locator pin or clamp to position the load at the station.

345.3 Means engages a conveyor portion (i.e. pallet) which is separable from the conveyor drive to fix the position of said conveyor portion:
This subclass is indented under subclass 345.2. Subject matter wherein a detachable conveyor portion or pallet is engaged by the aligning means to position the load at the station.

346 This subclass is indented under subclass 339.1. Apparatus including fixedly positioned means for supporting the load or a workman beside a conveyor while said load is being worked on, treated, or inspected.

346.1 Means to convey a palleted load back and forth between an initial location and the work station:
This subclass is indented under subclass 339.1. Apparatus wherein the load is supported by a carrier which is separable from a conveyor which transports the load and the pallet in both directions between an initial location (e.g., a main conveyor) and the working, treating or inspection station.

(1) Note. Included herein are reversibly driven conveyors and loop path forming conveyors which convey both the load and the pallet to and from a station and an initial location.

SEE OR SEARCH THIS CLASS, SUBCLASS:
465.1+, 681, 795, and 803.01+, for patents showing loads supported by separable carriers.

346.2 Means to transfer a load back and forth between the mainline conveyor and the work station:
This subclass is indented under subclass 339.1. Apparatus wherein only the load is transported in both directions between the mainline conveyor and the working, treating, or inspecting stations.

346.3 Conveyor(s) lowers the load to at least one of a plurality of fixed work stations:
This subclass is indented under subclass 339.1. Apparatus wherein the load is lowered to at least one of a plurality of fixed working, treating or inspecting stations by a conveyor and is then raised away from the station before continuing along the conveyor path.

347.1 CONVEYOR SYSTEM HAVING AUXILIARY SECTION FOR STORING ITEMS MOVING BETWEEN SOURCE AND DESTINATION:
This subclass is indented under the class definition. Subject matter including at least one primary path conveyor for the purpose of conveying articles from a supply to a destination and a laterally adjacent supplemental conveyor for the temporary repository of articles which have been diverted from the primary path conveyor

and which will subsequently be reintroduced onto the primary path conveyor.

347.2 Auxiliary section has the same entrance and exit:

This subclass is indented under subclass 347.1. Subject matter wherein the supplementary section receives and discharges articles relative to the primary path conveyor through the same passageway.

347.3 Auxiliary section has a reversibly driven conveyor for bidirectional article movement:

This subclass is indented under subclass 347.2. Subject matter wherein at least one conveyor in the supplemental section is capable of being driven in one direction during removal of articles from the main path conveyor and being driven in the opposite direction during return of articles to the primary path conveyor.

347.4 Plural laterally spaced, same direction auxiliary paths:

This subclass is indented under subclass 347.1. Subject matter wherein articles are diverted onto one of several laterally separated auxiliary conveyors which are all driven in the same direction to return articles to the primary path conveyor at a point upstream or downstream from the point of initial diversion.

348 This subclass is indented under the class definition. Apparatus having at least one driven conveyor section, said apparatus further having either a plurality of supply points or zones or a plurality of discharge points or zones arranged such that a discrimination may be made as to which supply or discharge point is to be used.

(1) Note. An outlet which is in constant communication with a conveying system and which can be pointed to direct the flow in different directions is not considered to constitute a selective or changeable destination and will not be found herein.

(2) Note. Recycling of the load back to a supply is not considered to comprise plural destinations.

(3) Note. The word arrangement as used in this title and the definitions indented hereinunder includes a single conveying section which is provided with either means to alter the length of travel of the load along the section so that different sources or destinations may be communicated with the section or means which allows selective supply or delivery of the conveying section from either side.

SEE OR SEARCH THIS CLASS, SUBCLASS:

536, for a conveyor system having a gravity section and wherein the last section of the system is adjustable, usually for the purpose of changing the exit path of material leaving the system.

537, for a conveyor system having a gravity conveyor section and having means to handle a portion of the load which becomes separated from the main flow path and wherein the separated portion may comprise a portion which is shunted to an auxiliary path for return to the main supply and eventual recirculation.

580, for a conveyor system having plural power-driven conveyor sections and wherein a portion of the load is recycled in a closed path.

SEE OR SEARCH CLASS:

209, Classifying, Separating, and Assorting Solids, appropriate subclass, for conveying arrangements which function to separate or sort conveyed articles based on either a physical characteristic of the articles or a load carried code; further, see subclasses 703+ and 705 for power-driven sorting tables and carriers, respectively. If a destination code is carried by a reusable load carrier in lieu of a article itself, the patent will be placed as an original in this class (198). Also, a conveyor to transfer material (or an article) to a selected destination by use of computer memory is to be found in this class (198). The combination of a Class 198 device with a Class 209 sorting means is to be found in Class 209.

414, Material or Article Handling, subclass 133, for conveying arrangements having some additional means external to the conveyor structure which allows an operator to control the destination of a conveyed load. Thus, Class 414 provides for patents claiming a conveying system having a central control means and a synchronous memory means, e.g., coded memory wheels, shift register system, etc. Examples of such arrangements are devices wherein a code would be impressed by an operator at a central station onto an analog system associated with a conveying section; that is, the code would be placed in a device separate from, but which operates in synchronism with the conveying structure. Operator actuated keyboards used to effect destination selection will likewise be found in Class 414.

349 This subclass is indented under subclass 348. Apparatus wherein the arrangement is provided with an operations control means which is arranged with respect to the systems' load transferring means such that it controls the manner of communication of the transferring means with a selected source or destination in response to changeable operating instructions introduced into the conveyor arrangement by the operator, said instructions being either introduced into the system at a point remote from the control means by means of an information carrying element moved in association with said transferring means or being contained in information storage means associated with the control means.

349.1 By synchronously moving signal carrier distinct from conveyor:
This subclass is indented under subclass 349. Apparatus including a driven conveyor section for movement in a particular manner and including a memory member for movement in direct relationship thereto, such that movement of the conveyor is accompanied by corresponding movement of the memory member.

(1) Note. The "memory member" of this subclass stores the "changeable operating instructions" as set forth in the definition of parent subclass 349. "Memory" allows utilization of information at a time later than input time later than input time.

(2) Note. A memory member riding <u>on</u> a conveyor is not considered to be a "synchronous" for placement herein.

(3) Note. The synchronous signal carrier of this subclass may be called a "timer", but ever "timer" is not a synchronous signal carrier.

349.2 Moving at different velocity than conveyor:
This subclass is indented under subclass 349.1. Apparatus wherein the memory member is driven at a different speed or in a different manner (e.g., about an axis rather than linearly) than the linearly) than the conveyor.

349.3 Rotary signal carrier:
This subclass is indented under subclass 349.2. Apparatus wherein the memory member is generally circular in cross-section and is driven to turn about its concentric axis.

349.4 Magnetic means on rotary carrier stores codes:
This subclass is indented under subclass 349.3. Apparatus (a) wherein the turning memory member includes a sensor responsive to prescribed magnetic characteristics of the surrounding structure or, (b) including a fixed sensor responsive to prescribed magnetic characteristic of the turning memory member.

349.5 Using central memory to store code until article is discharged:
This subclass is indented under subclass 349. Apparatus including a memory member to allow selection in advance of the particular supply/discharge point/zone of the material on the conveyor and to store such selection until disposition of such material.

(1) Note. The "memory member" of this subclass stores the "changeable operating instructions" as set forth in the definition of parent subclass 349. "Memory" allows utilization of information at a time later than input time.

(2) Note. The following terms are common among the patents of this subclass: “central memory”, “computer”, “timer”, etc.

349.6 Memory stores plural sources or destinations:
This subclass is indented under subclass 349.5. Apparatus wherein the memory member is intended to allow selection of multiple supply/discharge points/zones of the portions of material and stores such selections until disposal thereof.

349.7 Inventory also in memory:
This subclass is indented under subclass 349.6. Apparatus also including provision to determine placement of material in the conveyor arrangement and to store that information substantially permanently for later retrieval or replacement of the material.

349.8 Material detector indexes codes:
This subclass is indented under subclass 349.6. Apparatus having a material sensor positioned along the conveying path to cause the changeable operating instructions to be revised as the material travels through the conveyor arrangement.

349.9 Plural, longitudinally spaced, material detectors index code:
This subclass is indented under subclass 349.8. Apparatus having multiple sensors positioned along the conveying path to cause the changeable operating instructions to be revised as the material travels through the conveyor arrangement.

349.95 Conveyor detector indexes code:
This subclass is indented under subclass 349.6. Apparatus having a sensor responsive to the position of a portion of the conveyor to cause the changeable operating instructions to be revised as the conveyor moves.

350 This subclass is indented under subclass 349. Apparatus wherein means are provided which contain or store the operating instructions as the lines of force emanating from a magnetic element within said means.

351 This subclass is indented under subclass 349. Apparatus wherein the arrangement is provided with relatively moveable members, one of which carries means containing or introducing changeable operating instructions. Said means containing or introducing the changeable instructions comprises a contact element, the position of which may be varied. Another of said members is provided with structure which is contacted by and coacts with said contact element, when said element is aligned therewith, to effect communication between a particular source or destination and the transferring means.

352 This subclass is indented under subclass 351. Apparatus wherein said means containing or introducing the operating instructions is provided with a plurality of contact elements which are capable of being arranged in different arrays. The structure contacted by said elements is constructed so that it will only coact with single specific array of said elements.

353 This subclass is indented under subclass 351. Apparatus wherein the member carrying the means containing or introducing the operating instructions includes a support upon which said contact element is mounted for sliding movement, said contact element being moveable along said support to a plurality of positions at each of which said element is aligned with the coacting structure of a different other member.

354 This subclass is indented under subclass 351. Apparatus wherein said containing or introducing means includes a contact element supporting structure having a plurality of apertures or recesses within which said element is releasably retained.

355 This subclass is indented under subclass 349. Apparatus wherein the means containing the operating instructions includes a movable member which coacts with an electric circuit to energize the circuit for effecting delivery of the conveyed load to a selected destination.

(1) Note. The term switch as used herein includes any circuit completing device, some of which need not be physically contacted by the switch actuator, as for

example, a photocell and repositionable reflector. Also the switch actuator is generally an element mounted on or carried by some part of the conveying structure and is movable or repositionable relative to the part carrying it and is not merely the load units themselves. Thus, a counter which merely responds to the passage of a predetermined number of load units will not be found herein.

357 This subclass is indented under subclass 348. Condition responsive control means to prevent collision on merging conveyors: Apparatus wherein the arrangement is provided with means responsive to the feeding of a load from a source and means to regulate or position a load from another source or its conveyor when the danger of impacting upon one another exists.

358 Condition responsive control means including sensing condition of source or destination:
This subclass is indented under subclass 348. Apparatus , wherein the arrangement has means to detect a condition at a source or destination and means responsive to said means to control the operations of selected transfer means.

359 This subclass is indented under subclass 348. Apparatus wherein the arrangement includes one or more gravity conveyor sections.

360 This subclass is indented under subclass 359. Arrangement wherein a gravity conveyor section is repositionable.

(1) Note. Included herein are baffles that deflect a falling load.

361 This subclass is indented under subclass 360. Apparatus wherein a gravity conveyor section includes either a cylindrical member which is mounted to freely rotate about its longitudinal axis or a frame carrying a plurality of such cylindrical members, the attitude of either of which may be altered so as to direct the load to or from the arrangement at a selected source or destination.

363 This subclass is indented under subclass 348. Apparatus wherein a section has a plurality of means to supply it with material to be conveyed, which supply means are so interconnected and regulated that the composition of the load is controllable.

364 This subclass is indented under subclass 348. Apparatus wherein the coacting means is adapted for travel along the length of the conveying path so that said means can be shifted to different supply or discharge positions.

(1) Note. Means for distributing bales of hay along either side of a bale conveyor will be found herein.

SEE OR SEARCH THIS CLASS, SUBCLASS:
812, for conveyors of the endless type having means to vary the length of the conveying path.

367 This subclass is indented under subclass 348. Apparatus wherein the selecting means includes a member which is adapted to be placed athwart the path of movement of the conveyed load to direct the load to a selected conveying path.

367.1 Material diverted by plural, successive gates:
This subclass is indented under subclass 367. Apparatus including a circuit of travel for the material to the chosen destination having two or more shutters along that circuit that are actuated to directed the material therealong.

367.2 Plural, manually manipulated gate actuators:
This subclass is indented under subclass 367. Apparatus including a material directing shutter manipulated as a result of manual input from a keyboard or a plurality of hand or foot operated control members.

368 This subclass is indented under subclass 348. Apparatus wherein one or more of the conveying paths is provided with an abutment member which is capable of being shifted into the path of movement of the conveyed load to arrest load movement along that path.

369.1 One of a plurality of main line conveyors selectively moves to connect with a spaced path:

This subclass is indented under subclass 348. Subject matter wherein an adjacent source or destination route is physically separated from a principal carrying route having two or more carriers and including a particular means for effecting a relative movement of one of the carriers in the principal carrying route between the separated source or destination and the remainder of the principal carrying route to close the gap when it is desired to carry a load to or from the adjacent source or destination route.

SEE OR SEARCH THIS CLASS, SUBCLASS:

359+, for a system using a gravity conveyor which connects the system with a normally spaced source or destination.

370.07, through 370.09 and 370.1, for an adjacent conveyor movable instead of the main conveyor to close a gap between the main path and the adjacent path.

435, for a system for distributing articles of succession which are moved by one conveyor and are apportioned among plurality of second conveyors arranged to be one above the other and further convey or retain the apportioned articles.

369.2 Endless conveyor or portion thereof pivots about a horizontal axis perpendicular to path:

This subclass is indented under subclass 369.1. Subject matter wherein a continuous carrier or a part of the continuous carrier selectively tilts about a horizontal straight line extending normal to the principal carrying route to connect the principal carrying route with the spaced source or destination.

369.3 Endless conveyor or portion thereof pivots about an axis parallel to path:

This subclass is indented under subclass 369.1. Subject matter wherein a continuous carrier or a portion thereof selectively tilts about a longitudinal straight line extending parallel to the carrying route to connect the principal carrying route with a spaced source or destination.

369.4 Roller pivots about a vertical axis:

This subclass is indented under subclass 369.1. Subject matter wherein the main conveying path includes at least one revolving cylinder or similar element which supports the load and selectively swivels around an upward or downward straight line to convey the load to or from a selected source or destination.

369.5 Endless conveyor or portion thereof pivots about a vertical axis:

This subclass is indented under subclass 369.1. Subject matter wherein a continuous carrier or a part of the continuous carrier selectively swivels around an upward or downward straight line connecting the main line conveying path to a spaced source or destination.

369.6 Rollers shift the load vertically to a different plane:

This subclass is indented under subclass 369.1. Subject matter wherein the main line conveying path includes revolving cylinders or similar elements which move upward or downward as a unit to selectively transfer loads between the main line conveying path and the selected spaced source or destination.

369.7 Conveyor slides to provide an opening in main path:

This subclass is indented under subclass 369.1. Subject matter wherein the carrier moves selectively on a smooth continuous surface along or laterally of the carrier route to create an opening in the carrier route to selectively receive or discharge the load.

SEE OR SEARCH THIS CLASS, SUBCLASS:

359+, for a system using a gravity conveyor to connect the system with a normally spaced source or destination.

370.01 By loading or unloading section at a selected one of a plurality of pre-established locations along the length thereof:

This subclass is indented under subclass 348. Subject matter wherein (a) a main line conveyor has two or more supply or discharge points at intervals along the conveyor's path and (b) a means to select which of these points is to be used to receive a load to the carrier or to discharge the load from the carrier.

(1) Note. The selected locations along the length may be merely the ends of the conveyor and do not necessarily include the selective locations in between.

SEE OR SEARCH THIS CLASS, SUBCLASS:

359+, for a system using a gravity conveyor which connects the system with a normally spaced source or destination.

369.1+, for a main line conveyor which selectively moves relative to adjacent conveyors to feed or receive from the spaced source or destination.

371.1+, for a reversibly driving main line section.

890+, for selective delivery from or to plural laterally spaced paths which are upstream or downstream of the conveyor.

370.02 Conveyor has independent lateral pushers:
This subclass is indented under subclass 370.01. Subject matter wherein the carrier includes more than two force or pressure exerting elements which selectively move the loads sideway of the carrier for discharge or receipt at the selected location along the conveyor's path.

SEE OR SEARCH THIS CLASS, SUBCLASS:

370.03+, for an independently movable load supporting portion.

370.03 Conveyor has independently movable load supporting portions:
This subclass is indented under subclass 370.01. Subject matter wherein the carrier includes more than two load holding members which are moved along the carrying path and each member is capable of partaking of a motion separate from other members of the carrier to affect the discharge or receipt of the load at a selected location along the carrier.

370.04 Supporting portions tilt about an axis parallel to path of travel:
This subclass is indented under subclass 370.03. Subject matter wherein the load holding members pivot transverse to the carrying route around a straight line in the same direction as the track of load movement.

370.05 Supporting portions tilt vertically about an axis perpendicular to path of travel:
This subclass is indented under subclass 370.03. Subject matter wherein the load holding members pivot in an upright plane relative to the carrying route around a straight line at a right angle to the route of load movement.

370.06 Supporting portions are laterally extending belts:
This subclass is indented under subclass 370.03. Subject matter wherein the load holding members are endless or segments of flexible bands having their conveying surfaces driven transverse to the conveying path.

370.07 By separate reciprocating or oscillating pusher:
This subclass is indented under subclass 370.01. Subject matter wherein an independent fixed location force exerting means having a back and forth or arcuate movement impels the load to or from the conveyor along the conveyor's length.

370.08 By separate endless or rotary pusher:
This subclass is indented under subclass 370.01. Subject matter wherein the conveyor is serviced by an independent fixed location with a continuous or circular motion force exerting means to impel the load to or from the conveyor along the conveyor's length.

370.09 By separate supporting rollers:
This subclass is indented under subclass 370.01. Subject matter wherein the conveyor is provided with an independent fixed location revolving cylinders or similar means which hold and impel the load to or from the conveyor along the conveyor's length.

(1) Note. Rollers are not directly used to convey the load along the main conveying path.

370.1 By separate endless or rotary supporting conveyor:
This subclass is indented under subclass 370.01. Subject matter including an independent fixed location continuous or circular motion carrier to hold and impel the load to or from the carrier.

370.11 By separate fluid jet:
This subclass is indented under subclass 370.01. Subject matter wherein an independent fixed location forceful rush of liquid, gas, or vapor through a narrow or restricted opening impels the load to or from the conveyor along the conveyor's length.

370.12 By selective application of suction:
This subclass is indented under subclass 370.01. Subject matter wherein a specific amount of load is impelled from a main line conveyor by the force produced due to a reduced air pressure.

370.13 By selective application of a magnetic field:
This subclass is indented under subclass 370.01. Subject matter wherein a body having a property of attracting a ferrous material is placed at specific locations on the main line conveyor to guide or remove the load having a ferromagnetic property.

371.1 By reversibly driving the main line section:
This subclass is indented under subclass 370.01. Subject matter wherein the selecting means includes a device to operate a portion of the main line conveyor selectively in the direction opposite to its normal direction of operation.

371.2 Endless belt or chain:
This subclass is indented under subclass 371.1. Subject matter includes a continuous band of flexible material (e.g., leather, rubber, fabric) or a continuous band constructed of links of metal, plastic or similar material.

371.3 Rollers:
This subclass is indented under subclass 371.1. Subject matter wherein the reversible section of the conveyor includes a revolving cylinder or similar element.

373 This subclass is indented under the class definition. Apparatus wherein a conveyor section or a conveyor system moves an article along a predetermined path, and wherein said article is turned to have its posture*, or its heading, or its leaning* intentionally or significantly varied with relation to said path. (*These terms are discussed in (2) Note below.)

(1) Note. In this and indented subclasses the disclosed intent of the claimed apparatus is important. Therefore, although the structure of two devices may be similar, a patent disclosing such structure will be placed into this portion of the schedule only if its claimed disclosure is clearly for accomplishing one of the functions set forth in the definition by asterisk (*) and further discussed in (2) Note that follows. The similar structure that is disclosed in terms of its structure and not disclosing such a function will be found elsewhere in accordance with its claimed function or its claimed structure that is provided for in other subclasses of this schedule.

(2) Note. For the purpose of helping to visualize the terms to be discussed herein, assume a three-dimensional-line figure consisting of three axes (i.e., an "X-axis", a "Y-axis" and a "Z-axis") that intersect at a mutual point, each axis being perpendicular to the plane in which both of the other two axes lie. Assume further that said mutual point lies within the article to be conveyed and that a) the conveyor moves the article in the direction of the "X-axis", b) the conveyor has a major article-support surface that extends transversely (i.e., athwart) of said direction along the "Z-axis", and c) the remaining axis that extends perpendicularly of the plane formed by both of the previously-mentioned axes is the "Y-axis". With these assumptions in mind, variation in "posture" will refer only to a turning of an article about a "Z-axis", variation in "heading" will refer only to a turning of an article about a "Y-axis", and variation in "leaning" will refer only to a turning of an article about an "X-axis". It is understood that any or all of these turnings may occur sequentially or simultaneously, and if there is a major dimension of the article being conveyed, such major dimension may coincide with any or none of the axis mentioned.

(3) Note. This note is in amplification of preceding notes regarding intent of dis-

closure and attitude of article relative to its conveyed direction. The predetermined path of an article may be straight, or arcuate, or crooked, but whatever the path, if the conveyed article is at a first point on the path with a particular dimension in a particular relationship to the path (e.g., its length is parallel to the path), and is thereafter at a second point with the same dimension in a different relationship to the path (e.g., its length is perpendicular to the path), its attitude relative to the path has been changed. For proper placement of a patent into this, or an indented subclass, the claim thereof must recite the change in attitude of the article in significant terms; that is, the recitation must be clear, and the change must be intentional. A patent that discloses a change in attitude that is incidental to the movement of an article on a conveyor system (e.g., an article on a nonrectilinear system could change its attitude relative to a particular compass direction, but not necessarily change relative to conveyed direction) will not be placed herein, but will be placed on the basis of the claimed function or structure of the conveyor.

374 This subclass is indented under subclass 373. Apparatus wherein the articles move sequentially past a station at which the articles are either turned or not turned in a preset pattern, which pattern occurs repeatedly, whereby groups of articles are formed, each group appearing like other similar groups.

SEE OR SEARCH THIS CLASS, SUBCLASS:

418+, for a conveyor system forming groups of articles wherein the facing of individual articles therein is not significant.

375 This subclass is indented under subclass 373. Apparatus wherein a) a member retains an article with respect to itself, b) the member is mounted on a conveyor section that thereby moves the member and the article concurrently in the conveyed direction, and c) the member is moved with respect to the conveyor section, whereby the member and its retained article are both turned with respect to the conveyed direction.

(1) Note. The limitation that the member retains the article does not preclude the movement of the article into or out of the member as long as the article is held in the member during the conveyance thereof.

376 This subclass is indented under subclass 375. Apparatus provided with means for detecting the presence or attitude of an article, and provided with means for regulating or changing the operation of said apparatus, wherein said regulating means is caused to operate as a result of the detection of the article by the detecting means.

377.01 Holder carried by orbiting conveyor:
This subclass is indented under subclass 375. Subject matter wherein the conveyor section comprises a plurality of components that are connected together and moved in a closed-loop path such that each component is followed by and preceded by another component and a part of the closed-loop path coincides with a part of the path of a movement of the article holder.

377.02 Holder rotates item about axis spaced from the item:
This subclass is indented under subclass 377.01. Subject matter wherein the holder conveying the article is turning the article about referenced straight line which lies outside the physical boundary of the article.

377.03 Holder having load gripping element:
This subclass is indented under subclass 377.02. Subject matter wherein the holder includes either (1) a device which holds or attracts the article by friction or by use of a force field, or by fluid current or (2) a device which attracts the article by the force field or fluid pressure difference on the conveyor.

SEE OR SEARCH THIS CLASS, SUBCLASS:

470.1+, for a conveyor system including a rotating or endless carrier having a load gripping element.

803.3, for grippers mounted on a single rotary or endless conveyor.

377.04 Holder having vacuum or air blast element:
This subclass is indented under subclass 377.03. Subject matter wherein the holder includes a gaseous fluid medium under subatmospheric or atmospheric pressure to hold the article during conveyance.

SEE OR SEARCH THIS CLASS, SUBCLASS:
471.1, for a conveyor system including a rotating or endless carrier having a suction type load gripping element.
689.1, for a conveyor section using suction to enhance friction between the load and the conveyor.
803.5, for a conveyor section having suction holders.

377.05 Holder having magnetic or electrostatic element:
This subclass is indented under subclass 377.03. Subject matter wherein the holder includes the force field from either the attraction or repulsion of (1) magnetic charges (i.e., magnetism), or (2) electric charges at rest (i.e., static electricity) to hold the article during conveyance.

SEE OR SEARCH THIS CLASS, SUBCLASS:
472.1, for a conveyor system including a rotating or endless carrier having a magnetic or electrostatic gripping element.
690.1, and 691, for conveyor section using magnetic or electrostatic forces to enhance frictional contact between the load and the conveyor.
803.6, for a conveyor section with magnetic or electrostatic holders.

377.06 Holder rotation stops at predetermined position:
This subclass is indented under subclass 377.02. Subject matter wherein the rotating holder stops at a previously established location relative to the conveyor portion supporting the holder.

377.07 Holder having load gripping element:
This subclass is indented under subclass 377.01. Subject matter wherein the holder includes either (1) a device which holds or attracts the article by friction or by use of a force field, or by fluid current, or (2) a device which attracts the article by the force field or fluid pressure difference on the conveyor.

SEE OR SEARCH THIS CLASS, SUBCLASS:
377.03+, for a load gripping means for a holder which rotates the load about an axis which lies outside a load boundary.
470.1+, for a conveyor system including a rotating or endless carrier having a load gripping element.
803.3, for grippers mounted on a single rotary or endless conveyor.

377.08 Holder having vacuum or air blast element:
This subclass is indented under subclass 377.07. Subject matter wherein the holder includes a gaseous fluid medium under subatmospheric or atmospheric pressure to hold the article.

SEE OR SEARCH THIS CLASS, SUBCLASS:
377.04, for a load gripping means having a vacuum means for a holder which rotates the load about an axis lies outside a load boundary.
471.1, for a conveyor system including a rotating or endless carrier having a suction type load gripping element.
689.1, for a conveyor section using suction to enhance friction between the load and the conveyor.
803.5, for a conveyor section having suction holders.

377.09 Holder having magnetic or electrostatic element:
This subclass is indented under subclass 377.07. Subject matter wherein the holder includes the forced field from either attraction or repulsion of (1) magnetic charges (i.e., magnetism) or (2) electric charges at rest (i.e., static electricity).

SEE OR SEARCH THIS CLASS, SUBCLASS:
377.05, for a load gripper having a magnetic or electrostatic means for a holder which rotates the load about the axis which lies outside the load boundary.

472.1, for a conveyor system including a rotating or endless carrier having a magnetic or electrostatic gripping element.
690.1, and 691, for conveyor section using magnetic or electrostatic forces to enhance frictional contact between the load and the conveyor.
803.6, for a conveyor section with magnetic or electrostatic holders.

377.1 Holder rotation stops at predetermined position:

This subclass is indented under subclass 377.01. Subject matter wherein the rotating holder stops at a previously established location relative to the conveyor portion supporting the holder.

378 This subclass is indented under subclass 377.01. Apparatus wherein said member moves relative to the conveyor in a step-by-step manner, or the conveyor section moves in a step-by-step manner relative to the path of the article being conveyed.

(1) Note. The described movement permits the article to be "indexed" in a stop-and-go fashion in order to permit an operation to be performed on the conveyed article during periods of stopping, and then convey the article to its next operation, or convey another article to an operation station.

379 This subclass is indented under subclass 373. Apparatus wherein an article moving on a conveyor is momentarily stopped in its movement, the stoppage occurring by reason of the article being securely held, and wherein the article so held is rotated about a stationary axis of rotation before the article is released for further conveyance by the same, or a different conveyor.

(1) Note. The holding can be performed by a suction member, or a magnetic member, or a gripper couple comprising two surfaces engaging the article frictionally on opposing sides thereof.

380 This subclass is indented under subclass 373. Apparatus wherein a gas or a liquid pressure impinges against the article being conveyed by a conveyor section to effect a turning of the article.

(1) Note. The pressurized fluid that effects the turning is in addition to whatever mechanism that effects the conveyance of the article.

SEE OR SEARCH THIS CLASS, SUBCLASS:
493+, for a conveyor wherein impinging fluid is a conveyor means.

381 This subclass is indented under subclass 373. Apparatus wherein a device that generates lines of magnetic flux acts upon the article being conveyed by a conveyor section to effect a turning of the article.

(1) Note. The magnetism that effects the turning is in addition to whatever mechanism that effects the conveyance of the article.

SEE OR SEARCH THIS CLASS, SUBCLASS:
619, for a conveyor wherein magnetic forces effect movement.
690.1, for a conveyor wherein magnetic forces enhance the friction of a conveyor.

382 This subclass is indented under subclass 373. Apparatus wherein the initial attitude of any article is unpredictable and wherein as the article is conveyed on or by a conveyor its attitude relative to its path of conveyance is caused to be predictable.

(1) Note. Included in this and indented subclasses are devices wherein articles are supplied in a hopper or on a conveyor in a haphazard array, or faced in a direction relative to the conveyor in a manner which cannot be predicted to occur. If, by change, a particular article is properly faced on the conveyor, no change in its attitude will occur. However, if an article is improperly faced, either its attitude or its facing will be corrected, or it will be returned to supply for reconveyance and proper refacing; in either event, the attitude must be changed or corrected to be moved through the conveyor.

(2) Note. In this and indented subclasses, the meaning of the word "uniform" will vary with the intent of the disclosure. For example, if in one disclosure the article at its source is in a haphazard (i.e., random) array, and at its destination the article is in an attitude which is acceptable as disclosed (e.g., one of two attitudes, either of which is acceptable), then the occurrence of that attitude is predictable and, therefore, is "uniform" in accordance with the disclosed intent. However, if in another disclosure the article at its source is in one of the two attitudes, the occurrence of which attitude is not predictable (i.e., random), and at its destination the article must be faced in only one particular attitude to be acceptable as disclosed, then only the proper attitude is predictable and, therefore, is "uniform" in accordance with the other disclosed intent.

383 This subclass is indented under subclass 382. Apparatus wherein the article to be conveyed has a particular configuration, and wherein the conveyor, or an adjunct thereto, has a particular configuration, and wherein the two configurations conform one to the other, whereby only an article whose configuration conforms to the conveyor configuration will be conveyed.

(1) Note. To be properly placed into this or an indented subclass, a patent must include a claim to a conveyor portion that is clearly shaped so as to match or fit or be inserted into an article, and the claim should be clear that cooperation between the conveyor portion and the conveyed article occurs, such that articles that fit the conveyor pass and articles that do not fit the conveyor do not pass.

384 This subclass is indented under subclass 383. Apparatus wherein the conveyor comprises a plurality of components that are connected together and moved in a closed-loop path such that each component is followed by and preceded by another component and a part of said closed-loop path coincides with a part of the path an article to be conveyed, one or more components forming a receptacle for an article during its conveyance and each receptacle having means associated therewith for moving the article relative to the receptacle as it is conveyed therein, whereby each article is turned to a uniform facing in each receptacle.

385 This subclass is indented under subclass 384. Apparatus wherein the means for moving the article relative to the component comprises a rotating wheel having a periphery that contacts the surface of the article is received within the receptacle, and wherein the article is a spheroidal object having a relatively small portion of its surface depressed within the outline of the major portion of its surface to an extent that when the wheel or an auxiliary finger fits the small, depressed surface the wheel periphery will not contact the depressed portion, at which time the wheel will cease moving the article within the component.

(1) Note. In most of the devices of this subclass, the roller serves the dual purpose of turning the object until the roller periphery "finds" the depression in the object; in some of the devices the roller periphery turns the object and an auxiliary finger, or "finder", senses the depression and causes the wheel to stop its rotation or move out of contact with the object; in either event, the object will stop turning when it is properly faced within the receptacle or pocket.

(2) Note. The objects being conveyed and faced in this and the indented subclasses are usually peaches, apricots, or other "drupe" fruits having a line of cleavage along which line a pit is aligned, or are other food objects such as apples, olives, whole pears, that are characterized by having a surface depression or indentation with respect to which depression the fruit is to be faced for further processing.

386 This subclass is indented under subclass 385. Apparatus wherein the rotating wheel turns about an internal axis of turning, and can be further turned about a different axis of turning.

(1) Note. Usually the roller is mounted between the branches of a bifurcated stem, the length of which is perpendicular to the axis of the roller. Thus, the

roller rotates in a vertical plane on its own horizontal axis, whereas the stem rotates on its longitudinal axis, thereby changing the vertical plane in which the roller rotates.

387 This subclass is indented under subclass 384. Apparatus wherein the components comprise rotatable shafts extending laterally across the direction of movement of the conveyor and moving perpendicular to their extent in said direction, each shaft having one or more peripheral depressions in the circumference thereof, adjacent shafts having their peripheral depressions aligned along the direction of movement, whereby the peripheral depressions of two adjacent shafts form a receptacle for the conveyed article.

(1) Note. The device of this subclass conveys an ovid object, such as a egg, supported between adjacent rollers in the grooves of the rollers. By rotating the objects on the roller, the longitudinal axis of the ovid is caused to extend parallel to the axes of the rollers and perpendicular to the direction of movement thereof.

388 This subclass is indented under subclass 383. Apparatus wherein the configuration on the conveyor is a part, on or adjacent the conveyor, that juts out or protrudes into the path of articles being conveyed, wherein the configuration of the article includes a bifurcation or a cavity therein, and wherein the conveyor configuration is inserted into the article configuration, whereby those articles that match configurations pass along the conveyor and those that do not match configurations do not pass along the conveyor, or are turned so that the configurations do match.

(1) Note. Usually, those articles that do not match and pass are returned to a supply of articles for recirculation and refacing.

389 This subclass is indented under subclass 383. Apparatus wherein the article to be conveyed is so proportioned that with respect to a major dimension thereof a first portion extending perpendicular to the dimension at one end thereof is larger than a second portion extending perpendicular to the dimension at the other end, and wherein the conveyor is provided with supports that are so spaced that the article will move along the conveyor with the first portion above the supports and the second portion hung from and below the supports.

390 This subclass is indented under subclass 383. Apparatus wherein the configuration of the conveyor is in the form of an opening through which an article passes, and wherein the article to be conveyed is configured to have its bounding line conforming to the bounding line of the opening, whereby articles so faced as to have their bounding lines matched with the opening pass therethrough.

391 This subclass is indented under subclass 383. Apparatus comprising a bowl-shaped means having a passageway which conforms to the article to be conveyed, and wherein the attitude of the article relative to its path of conveyance is caused to be predictable by vibrating said bowl.

392 This subclass is indented under subclass 383. Apparatus comprising means having a passageway or exit which conforms to the article to be conveyed whereby the attitude of the article relative to its path of conveyance is caused to be predictable by rotating said means.

393 This subclass is indented under subclass 383. Apparatus wherein the conveyor comprises a plurality of components that are connected together and moved in a closed-loop path such that each component is followed by and preceded by another component and a part of said closed-loop path coincides with the path of an article to be conveyed, each component forming a receptacle that is configured to the configuration of the article to be conveyed, and wherein another part of said closed-loop path coincides with a hopper or bin in which the articles are temporarily stored in haphazard array, whereby as a receptacle moves within the hopper an article will be received thereinto if its configuration conforms to the receptacle configuration and the so-received article will be conveyed.

SEE OR SEARCH THIS CLASS, SUBCLASS:

397, for similar structure wherein an item-receiving pocket does not fit the item.

394 This subclass is indented under subclass 382. Apparatus wherein the article to be conveyed is formed with a particular point or zone thereon which is identifiable to the apparatus as that point which should face in a predetermined direction relative to the conveyor, and wherein the article, while it is being conveyed, is caused to turn on its own axis and is caused to stop turning when said point or zone is faced in said predetermined direction.

(1) Note. The article is usually a bottle or a can having a visible projection or seam that is to be faced relative to a station (e.g., a label-applying station). However, the position characteristic can be a visible mark or an invisible indicium that is sensed by the apparatus. For other means actuated in response to an improperly-faced article, see subclass 395.

SEE OR SEARCH THIS CLASS, SUBCLASS:
395, and see (1) Note above.

395 This subclass is indented under subclass 382. Apparatus provided with means for detecting the attitude of an article and further provided with means for regulating the operation of said apparatus such that the article attitude will be corrected, or the article is rejected if it is presented incorrectly, and the attitude will remain unchanged if the article is presented correctly.

(1) Note. Usually those articles that are rejected are returned to a supply of articles for recirculation and refacing.

396 This subclass is indented under subclass 382. Apparatus wherein the conveyor moves in a path, a part of which path coincides with a bin in which the articles to be conveyed are temporarily stored in a haphazard array, and wherein the article is taken from said bin and its attitude changed during the movement of the conveyor.

397.01 By orbiting progression of item-receiving pockets passing through supply:
This subclass is indented under subclass 396. Subject matter wherein the conveyor comprises a plurality of components that are connected together and moved in a closed-loop path such that each component is followed by and preceded by another component, a part of said closed-loop path coincides with the path of an article to be conveyed, and other part of said path coincides with the bin, and wherein each component forms a receptacle for the article to be conveyed.

SEE OR SEARCH THIS CLASS, SUBCLASS:
393, for similar structure wherein an item-receiving pocket fits the shape of the item.

397.02 Rotary pocketed conveyor:
This subclass is indented under subclass 397.01. Subject matter wherein the item-receiving pockets in the conveyor turns symmetrically about an assumed straight line during the conveyance of the article.

397.03 Horizontal axis of rotation:
This subclass is indented under subclass 397.02. subject matter wherein the straight line about which the pockets turns during the conveyance of the article is directed horizontally.

397.04 Item oriented while on rotary conveyor:
This subclass is indented under subclass 397.03. Subject matter wherein the rotating conveyor includes a device which places the article in a position relative to a referenced direction during the conveyance of the article.

397.05 Item oriented while on rotary conveyor:
This subclass is indented under subclass 397.02. Subject matter wherein the rotary conveyor includes a device which places the article in a position relative to a referenced direction during the conveyance of the article.

397.06 Item oriented while on endless conveyor:
This subclass is indented under subclass 397.01. Subject matter wherein the conveyor includes a continuous bend of flexible material or a continuous band constructed of links of metal, plastic or similar material having a device which places the article in position relative to a referenced direction during the conveyance of the article.

398 This subclass is indented under subclass 382. Apparatus wherein the article being conveyed is presented in one of only two opposite attitudes (the occurrence of any particular attitude being random or unpredictable), and wherein the conveyor, or an adjunct thereto, differentiates between the opposite attitudes and causes all the articles to have the same attitude.

(1) Note. This subclass provides for a device wherein articles facing one way will be separated from those articles facing the opposite way so that both articles will face the same way, but will travel in different directions, or the improperly-faced articles will be returned to the supply of articles for recirculation and refacing.

399 This subclass is indented under subclass 398. Apparatus wherein those articles having the correct attitude will remain in that attitude, and those articles having an incorrect attitude will have their attitudes changed to be correct.

400 This subclass is indented under subclass 398. Apparatus wherein each article has its attitude changed so that they all have the same attitude and all are moving along the same path of movement.

401 This subclass is indented under subclass 373. Apparatus provided with means for detecting the presence or absence of an article and further provided with means for regulating or changing the operation of the conveyor that causes an article to be turned, wherein said regulating means is actuated as a result of a detection by said detecting means.

402 This subclass is indented under subclass 373. Apparatus wherein each article that is conveyed in a sequence of articles is turned upside down (i.e., from an attitude wherein a particular face that is up is changed to an attitude wherein that particular face is down).

(1) Note. In this subclass the mechanism for inverting is a passive means acting in conjunction with a powered conveyor to invert successive articles.

403 This subclass is indented under subclass 402. Apparatus provided with mechanism that is powered to effect the turning of each article upside down.

(1) Note. In this subclass the mechanism for inverting is separate from the apparatus for conveying.

404 This subclass is indented under subclass 403. Apparatus wherein the conveyor for articles includes one or more components moving in a closed-loop path and a part of said closed-loop path coincides with a part of the path of the articles to be conveyed, and wherein the conveyor effects the turning of each article upside down.

405 This subclass is indented under subclass 404. Apparatus wherein the conveyor comprises an endlessly-orbiting surface that travels in the direction of the “X” axis and extends transversely of said direction along a “Z” axis, and wherein as a particular “Z” axis line moves along the “X” axis, the “Z” axis turns about the “X” axis, thereby turning the article supported and carried by the surface.

(1) Note. The terms “X” axis and “Z” axis are defined and further discussed in (2) Note of subclass 373.

(2) Note. Usually the conveyor comprises two belts cooperating together to frictionally maintain a conveyed article between them and both belts twist together.

406 This subclass is indented under subclass 373. Apparatus wherein each article that is conveyed in a sequence of articles is a) lifted or lowered relative to an original direction of conveyance, and is also b) turned about its “Z” axis, during its conveyance.

(1) Note. See (2) Note to subclass 373 for a definition and further discussion of “Z” axis.

(2) Note. A device wherein an article is simply lifted and lowered (or vice versa) to its original elevation is not in this sub-

class, but may be found in such subclasses as 411 or 414.

407 This subclass is indented under subclass 406. Apparatus wherein each article is conveyed through a conveyor system in which first one conveyor moves an article and then a second conveyor moves said article.

408 This subclass is indented under subclass 406. Apparatus wherein the conveyor for articles includes one or more components moving in a closed-loop path and a part of said closed-loop path coincides with a part of the path of the articles to be conveyed, whereby the conveyor changes both the elevation and the attitude of each article.

409 This subclass is indented under subclass 406. Apparatus wherein the conveyor for articles includes a component that is connected to an actuator that imparts to-and-fro motion in a path, at least part of which path coincides with a part of the path of the article to be conveyed, the component having the function of contacting an article to change both the elevation and the attitude of each article at least while the paths coincide.

410 This subclass is indented under subclass 373. Apparatus wherein each article that is conveyed in a sequence of articles has its attitude changed at least twice in different actions that are separated in time or distance from one another.

(1) Note. Included in this subclass is an apparatus wherein an article is faced in a particular direction to have an operation performed thereon, and that article is refaced in its original direction after the operation has been performed.

411 This subclass is indented under subclass 373. Apparatus wherein each article that is conveyed in a sequence of articles is moved by a conveyor and is turned by a mechanism that is powered to effect the turning of each article.

412 This subclass is indented under subclass 411. Apparatus wherein each article is moved by a plurality of conveyors in the form of separate conveyor sections forming a conveyor system, or in the form of separate conveyor components forming a conveyor section, but in either event, the conveyors are spaced apart along the direction of movement of the articles, and wherein the turning mechanism transfers each of the sequence of articles from a preceding conveyor to a succeeding conveyor, and during such transfer turns the article.

413 This subclass is indented under subclass 412. Apparatus wherein the turning mechanism comprises one or more members that pass through the space(s) between the conveyors to contact and turn the articles successively.

414 This subclass is indented under subclass 413. Apparatus wherein the turning mechanism contracts each successive article and is caused to raise the article out of contact with the conveyor, rotate the article partially with respect to the conveyor, and descend with the article to replace it on the same or a succeeding conveyor section.

(1) Note. In this subclass, it is not significant whether an article moves from one conveyor section to another conveyor section, or moves from one conveyor component to another conveyor component. It is significant that between the parts of a conveyor a turntable mechanism effects turning of the article.

415 This subclass is indented under subclass 411. Apparatus wherein each article is moved by plurality of components forming a conveyor section, all of which components engage the same item at the same time to move that item, but one of which components has a greater rate of movement than another of said components, whereby the components cooperate with each other and the article to effect turning of the article as it moves in the conveyed direction.

416 This subclass is indented under subclass 373. Apparatus wherein each article that is conveyed in a sequence of articles is moved by a conveyor and is turned by an appurtenance that is located next to the conveyor and in the path of movement of the articles, whereby during the movement of each article, it engages the appurtenance and the reaction between the moving article and the appurtenance causes the article to turn.

(1) Note. In most mechanisms of this subclass the member (i.e., appurtenance) is a stationary and fixed object, but it also may be member that, in use, is fixed in the path of the articles, but may be moved at will out of such path, or may be a member that is in the path of the article, but as the member is engaged by the moving article, the member moves to permit the now-turned article to pass.

417 This subclass is indented under subclass 416. Apparatus wherein the appurtenance comprises a channel through which the successive articles pass, which channel substantially encloses the outline of the article as seen in the "X" axis, and wherein sections through the channel taken in the plane of the "Y" axis and "Z" axis in successive stations along the "X" axis show the channel displaced angularly about the "X" axis.

(1) Note. For definitions and further discussion of the axes referred to, see (2) Note of subclass 373.

418 This subclass is indented under the class definition. Apparatus including at least two conveyor sections cooperating for the purpose of conveying plural articles in such manner that a particular plurality of articles will be arranged or formed into a particular array or cluster comprising a specific number of such articles, and for subsequently conveying said array or cluster as a separate collection.

(1) Note. This note is intended to express in short form the differences in the concepts among patents placed in this subclass (418) and those of the two following coordinate subclasses 434 and 463.1. In all three major subclasses and their indented subclasses, the function of the disclosed structure is the movement of one or more items via two or more conveyors. In this subclass (418) the items are arranged as an identifiable and significant group consisting of a predetermined plurality of items moved as a group through that structure being claimed by the patent. In subclass 434, the items are arranged as a succession of items consisting of an indeterminate number of items moved consecutively via the conveyors being claimed by the patent, and at least the last downstream claimed conveyor does not provide structure for individualization or separation between the successive conveyed items. In subclass 463.1 the items are individual and separate one from the other, each being an identifiable and significant item being moved separately via the conveyors being claimed by the patent, and at least the last downstream claimed conveyor does provide structure for individualization or separation between one item and a preceding or succeeding item.

(2) Note. For a patent to be placed in this or an indented subclass it is not necessary for a group to retain its identity separate from other such groups. For example, in a subclass such as 418.1 a formed group of items could be packed into a container (not claimed) into which other groups have been or will be packed. Nor is it necessary for all of the claimed structure to move the group as a group. For example, in a subclass such as 431 a group of items is formed by depositing successive items one by one into group formation, after which the group is moved as a group. The term "array" is inclusive of, but not limited to, a plurality of items arranged in a straight line; the term "cluster" is inclusive of, but not limited to, a plurality of items arranged in an irregular formation or a formation such as a circle. For purposes of convenience, the term "group" will be used in the definitions of subclasses indented hereunder unless one of the other terms is specifically applicable.

(3) Note. See the search note below for the line between Class 198 and the Material or Article Handling, class relative to apparatus for placing articles into or removing them from an intersupporting group.

SEE OR SEARCH CLASS:

271, Sheet Feeding or Delivering, subclasses 213+, for a conveyor on which sheets are delivered in succession to

form a stack, on which conveyor the stack is moved as a stack without the aid of structure other than the conveyor.

414, Material or Article Handling, the line between Class 198 Conveyors: Power-Driven, and Class 414, Material or Article Handling, relative to apparatus for placing articles into or removing them from an intersupporting group is as follows: (a) Class 198 takes such apparatus when (1) it consists of a power driven or gravity conveyor, (2) the site on which the group is supported is a horizontally extended conveyor surface, and (3) the group is formed on the surface of the conveyor while the conveyor both moves and transports the article in a horizontal direction; and (b) Class 414 takes such apparatus, even if it consists of a conveyor(s) proper for Class 198, when either (1) the site on which the group is supported is other than a conveyor proper for Class 198 (e.g., an elevator, a shelf) or (2) the site on which the group is supported is a conveyor surface which has been fully stopped while each article is added to the group.

418.1 Having items discharged from plural distinct outlets into group:

This subclass is indented under subclass 418. Apparatus in which either (1) a single conveyor section having two or more separate exits or (2) plural conveyor sections each having a separate exit deliver articles to another conveyor section on which the articles are arranged or formed into a common group.

(1) Note. The definition does not limit the taking of only one article from each of the exits. Rather, it permits the taking of one or more articles from any two or more exits even if one or more possible exits are skipped. The articles can be supplied from a random mass, a regular stack, or succession of articles.

418.2 With outlets longitudinally spaced along path of progressively formed group:

This subclass is indented under subclass 418.1. Apparatus wherein at least two of the conveyor exits which deliver articles to the group supporting conveyor section are positioned at different points along its length and add articles to the group thereon when it is moved past each of the exit points.

SEE OR SEARCH CLASS:

270, Sheet-Material Associating or Folding, subclasses 58.01+, for a mechanism to associate sheets from different supply stacks into new stacks containing different sheets in each new stack.

418.3 Superposes items within group:

This subclass is indented under subclass 418.2. Apparatus wherein at least a portion of one of the articles is placed by a delivery conveyor section on top of or below a portion of another one of the articles of the group which was previously delivered thereto either by this or another delivery conveyor.

418.4 With vertically aligned outlets discharging in the same direction and superposing items:

This subclass is indented under subclass 418.1. Apparatus wherein one of the conveyor exits which delivers articles to the group supporting conveyor section is positioned directly above and delivers articles in an identical direction to another conveyor exit, the articles delivered by both exits having each a portion thereof which is located above or below another article within the final group.

418.5 Having plural successive groups discharged by single conveyor into larger group:

This subclass is indented under subclass 418. Apparatus in which a single conveyor section having one exit consecutively delivers several small groups to another conveyor section on which the articles of the groups are arranged or formed into a bigger common group.

(1) Note. It is not necessary for the number of articles in each group to be the same as the number of articles in a previous or succeeding group, but the variances should recur regularly. For example, in forming a staggered layer of bottles to be

packaged, a row of seven bottles is formed, a row of six bottles is then formed, followed by another row of seven bottles.

418.6 Having conveyor drop grouped items simultaneously onto another conveyor:
This subclass is indented under subclass 418. Apparatus wherein a conveyor section which supports the entire group of articles is located above a second conveyor section to which it delivers the group by releasing all the articles of the group at the same time and allowing them to fall as a group onto the second conveyor.

418.7 Subdivides continuous item stream into longitudinally spaced groups:
This subclass is indented under subclass 418. Apparatus wherein the articles to be grouped are already in a succession of articles moving along a particular line of motion, and wherein the group is formed by separating the last article of a preceding group from the first article of a succeeding group while continuing the movement of the preceding group along substantially the same line of motion followed by its articles prior to becoming a group.

(1) Note. The separation can be caused by increasing the speed of the preceding group after the last item of the group has passed a particular point, or by intermittently stopping or decreasing speed of the first item of a succeeding group after the last item of the preceding group has passed a particular point.

418.8 By offsetting first or last article:
This subclass is indented under subclass 418.7. Apparatus which separates the preceding group from the succeeding group by abruptly shifting out of alignment with its adjacent articles, an article located at either (1) the end of the preceding group or (2) the beginning of the succeeding group.

418.9 And imbricates items within group:
This subclass is indented under subclass 418.7. Apparatus wherein the articles are delivered to the group in such a manner that the leading edge of each article in the group both (1) overlaps or underlies the trailing edge of the adjacent previously delivered article and (2) travels ahead of the leading edge of all articles subsequently placed within the group.

419.1 By item engaging stop means:
This subclass is indented under subclass 418.7. Apparatus wherein the preceding group is separated from the succeeding group by means which contacts the first article of the succeeding group and prevents its movement for a period of time.

419.2 By different speed conveyors:
This subclass is indented under subclass 418.7. Apparatus wherein the last conveyor section supporting the succession of articles to be formed into groups moves the articles at a different velocity for at least a portion of the time it transports them than the succeeding conveyor section which supports the formed groups.

419.3 With spaced dividers on conveyor limiting group size:
This subclass is indented under subclass 419.2. Apparatus wherein either (1) the last conveyor section supporting the succession of articles or (2) the succeeding conveyor section supporting the groups is provided with structural means located along its article transporting surface which restricts the number of articles possible in each group by dividing the surface into two or more distinct sections.

426 This subclass is indented under subclass 418. Apparatus wherein the articles to be grouped comprise a succession of such articles moving on a first conveyor along a particular line of motion, and wherein a particular plurality of said articles is engaged by means for transferring all of said particular plurality of articles at the same time from said first conveyor to a second conveyor, which transfer means moves in a direction different from said particular lines of motion.

(1) Note. For discussion of the term “stream”, see (1) Note of subclass 434 below.

427 This subclass is indented under subclass 426. Apparatus wherein the second conveyor is divided into a plurality of conveyor sections substantially corresponding in number to the number of articles in the transferred group,

whereby the articles transferred as a group are subsequently divided so that each article is one of a subsequent succession of articles on the second conveyor, and the number of such successions corresponds to the number of articles in the transferred group.

(1) Note. In the subclass (427), the items from one stream are arrayed in a group before being distributed into plural streams. For a mechanism wherein items from a stream are distributed into plural streams without the intermediate transfer as a group, see subclasses 436+.

SEE OR SEARCH THIS CLASS, SUBCLASS:
436, and see (1) Note above.

428 This subclass is indented under subclass 426. Apparatus wherein the transfer means includes a gaseous fluid medium under subatmospheric or above-atmospheric pressure.

(1) Note. The pneumatic conveyor usually is (though it is not limited to) a series of suction members that engage and carry the groups of items.

SEE OR SEARCH THIS CLASS, SUBCLASS:
438, and 493+, for other conveyors having transfer means using air blast or suction.

429 This subclass is indented under subclass 426. Apparatus , wherein the transfer means moves to-and-fro and during one of its movements engages the particular plurality of articles to transfer the articles simultaneously from the first conveyor to the second conveyor.

430 This subclass is indented under subclass 429. Apparatus wherein either a) the to-and-fro movement of the transfer means is in a direction that is angularly related to the line of motion imparted to the articles by the first conveyor, or b) the to-and-fro movement of the transfer means is included in a movement that follows an endless closed-loop path, at least a part of the to-and-fro movement intercepting the line of motion imparted to the articles by the first conveyor.

431 This subclass is indented under subclass 418. Apparatus wherein the articles to be grouped are conveyed one followed by another aligned along a particular line of motion on a first conveyor, and wherein the articles are engaged by a transfer means and placed one at a time in an aligned group on a second conveyor, which transfer means changes the line of motion of the articles on the second conveyor relative to the line of motion of the articles on the first conveyor, or changes the alignment of articles on the second conveyor relative to the alignment of articles on the first conveyor.

432 This subclass is indented under subclass 418. Apparatus wherein the articles to be grouped are conveyed as an array followed by another array, each array consisting of a particular number of articles aligned along a particular array line, which array line is substantially transverse to a line of motion of a first conveyor, and wherein each arrayed group of articles is engaged by a transfer means and placed as an arrayed group on a second conveyor, which second conveyor carries each successive conveyed group in an array whose alignment is transverse to the line of motion of the second conveyor.

(1) Note. Patents are placed in this subclass wherein the conveyed group is formed either on the first conveyor, by means associated with the first conveyor, or prior to placement as a group on the first conveyor.

433 This subclass is indented under subclass 418. Apparatus wherein the articles to be grouped are conveyed as an array followed by another array, each array consisting of a particular number of articles aligned along a particular array line, which line is substantially transverse to a line of motion of a first conveyor, and wherein each arrayed group of articles is engaged by a transfer means and placed as an arrayed group on a second conveyor, and the second conveyor carries the array so that its array line is in alignment with the line of motion of the second conveyor.

(1) Note. Patents are placed in this subclass wherein the conveyed group is formed either on the first conveyor, by means

associated with the first conveyor, or prior to placement on the first conveyor.

434 This subclass is indented under the class definition. Apparatus including at least two conveyor sections cooperating for the purpose of moving a succession of articles from one conveyor to another, and during such movement changing the relationship between, or the direction of movement of, or the path of, successive articles.

(1) Note. A conveyor system of this or an indented subclass functions to form a stream of items from a random mass or quantity of such items, or functions to redirect or respace the items of such a stream relative to each other, or functions to change the number of streams passing through the system. The term "stream of items" refers to a plurality of articles moving in accordance with two criteria. The first criterion is that the articles move in succession, one article followed by another which is followed by a third, etc., the number of articles so moved being indeterminate or indefinite. The second criterion is that the succession of articles moves along a predetermined line or path. It is not necessary that the line be straight, but if it is other than straight, it must be a line along which each article of the succession moves in its turn. It is not necessary that the line be the only line (i.e., there may be plural lines or streams), but if there are plural streams (e.g., one stream alongside another stream) the claimed disclosure must clearly describe the presence of such plural streams or describe means to channelize or guide each such streams separately from the other(s). Thus, a disclosure of a belt carrying a plurality of articles extending along the direction of movement of the belt and articles extending across said direction would not be considered as a disclosure of plural streams unless the specification clearly described the articles as being arranged in plural successions of articles or the structure indicated channels to form plural successions. In the absence of such "stream" disclosure the belt would be considered as a quantity source of articles or as a destination for articles.

(2) Note. A distinction should be made as to the structural and functional difference between a conveyor system for conveying plural articles arranged as a stream of items and a conveyor system for conveying plural articles, each article being a specific load as a separate unit. In the stream conveyor (found in this subclass (434) and indented subclasses) there is no means for dividing and maintaining separately one article from the preceding or succeeding article. The emphasis in the claimed disclosure of a patent to such a system is in the manner of forming the stream, or reforming the stream into other streams. In the unit conveyor (found in subclass 463.1, and indented subclasses) there is a means for dividing one article from the preceding or succeeding article and conveying it separately even though a plurality of articles may be conveyed simultaneously. The emphasis in the claimed disclosure of the patent in subclasses 463.1+ is in the individuality of each of the plural articles, rather than in the plurality of the articles. A particular conveyor section proper as part of a system for subclass 463.1 could be used as a means for combining or dividing streams and thus be proper as part of a system for subclass 434.

(3) Note. If the structure of a patent comprises a conveyor moving its load against a member that serves to deflect, or guide, or restrain, or regulate the movement of the load, and if the claimed disclosure of the patent significantly describes the load as comprising a plurality of articles, and further significantly describes the function of the structure as for forming a stream (defined in (1) Note above) from a source of such articles, or for changing the arrangement of streams a) from a particular number of streams upstream of the member to a different number of streams downstream of the member, or b) from a particular path of stream upstream of the member to a different path of stream downstream of the member or c) from a particular space

between successive articles upstream of the member to a different space between successive articles downstream of the member, in such a disclosure the upstream conveyor will be considered as one conveyor section and the downstream conveyor will be considered as a different conveyor section despite the apparent use of one conveyor element.

435 This subclass is indented under subclass 434. Apparatus wherein the articles of the succession that are moved by one conveyor are apportioned among a plurality of second conveyors, which second conveyors are arranged to be one above another, and further convey, or temporarily retain and then convey, the apportioned articles.

SEE OR SEARCH CLASS:

209, Classifying, Separating, and Assorting Solids, subclasses 509+, for a machine wherein sheets are assorted into plural receivers in accordance with characteristics of the respective sheets.

270, Sheet-Material Associating and see Search Class note below to Class 271.

271, Sheet Feeding or Delivering, subclasses 306+, wherein the sheets to be delivered comprise a sequence of two or more sheets that are being conveyed one after the other(s) toward two more receivers, the device being provided with means for diverting a first of said sheets into a first receiver a second of said sheets into a second receiver, the sequence continuing until a sheet is diverted into the last receiver, whereupon the next sheet of the sequence is diverted into said first receiver and the operation is repeated. A machine for Class 271, subclasses 306+, differs from a machine for Class 270, subclasses 58.01+, in that Class 271, subclasses 306+, provides for the stacking into plural receivers of sheets from a single or an undetermined source, whereas Class 270, subclasses 58.01+, provides for the stacking into plural receivers of sheets from a plurality of source stacks, the sheets of which are to be collated into a plurality of finished stacks. See the Search Class notes in the class definition of Class 271 for further discussion. In this subclass will also be found a machine which is programmed so that one or more of the receivers is "skipped" to form special stacks.

436 This subclass is indented under subclass 434. Apparatus wherein the purpose of the system is to change the path of successive articles from a single succession of articles to at least two successions of articles.

437 This subclass is indented under subclass 436. Apparatus provided with means for detecting a condition of a conveyor system, or of the load carried by said system, or of the environment in which the system operates, and provided with means for regulating or changing the operation of said system, wherein said regulating means is actuated as a result of the detection of the condition by said detecting means.

(1) Note. The regulating may be for the purpose of maintaining the intended operating conditions, as by slight changes on either side of usual operation. The changing may be for the purpose of altering or correcting the operating conditions, such as would result from feedback of undesired operating conditions or discovery of the need for new or different operating conditions.

438 This subclass is indented under subclass 436. Apparatus provided with means using a gaseous medium under sub-atmospheric or above-atmospheric pressure to change the path of successive articles.

439 This subclass is indented under subclass 436. Apparatus provided with means using lines of magnetic flux to change the path of successive articles.

440 This subclass is indented under subclass 436. Apparatus provided with a plurality of components that are connected together and moved in a closed-loop path such that each component is followed by and preceded by another component and a part of said closed-loop path coinciding with a part of the path of one of the successions of articles referred to in the defini-

tion of subclass 436, each component having the function of contacting one article of a succession thereof, whereby said article will be caused to partake of movement that is imparted to said component at least while said paths coincide.

441 This subclass is indented under subclass 440. Apparatus wherein the closed-loop path is a circle, and the components follow the circular path.

442 This subclass is indented under subclass 436. Apparatus provided with a member that may be positioned to intersect the line of movement of said single succession of articles in such manner as to either a) intersect said line or not intersect said line after passage of successive articles, or b) intersect said line in a particular relationship to said line, or intersect said line in a different relationship to said line after passage of successive articles, whereby to cause at least two successions of articles to be formed from the single succession of articles.

443 This subclass is indented under subclass 434. Apparatus wherein the purpose of the system is to change a supply of articles into at least one succession of articles.

(1) Note. The term "quantity source of items" has been used to refer to a supply consisting of many articles. Thus it includes a mass of articles having a haphazard or random arrangement, as well as a supply of plural streams of items as in subclass 448 below. The term does not refer to a single stream from which only one article can be taken at a time; for disclosure of such a function, see subclasses 463.1+ below.

SEE OR SEARCH THIS CLASS, SUBCLASS:
463.1+, and see (1) Note above.

444 This subclass is indented under subclass 443. Apparatus provided with means for detecting a condition of a conveyor system, or of the load carried by said system, or of the environment in which the system operates, and provided with means for regulating or changing the operation of said system, wherein said regulating means is actuated as a result of the detection of the condition by said detecting means.

(1) Note. The regulating may be for the purpose of maintaining the intended operating conditions, as by slight changes on either side of usual operation. The changing may be for the purpose of altering or correcting the operating conditions, such as would result from feedback of undesired operating conditions, or discovery of the need for new or different operating conditions.

445 This subclass is indented under subclass 443. Apparatus wherein the purpose of the system is to change a supply of articles into two or more successions of articles.

446 This subclass is indented under subclass 445. Apparatus provided with means to agitate, vibrate, or jog the successive articles so as to urge the articles into separate successions of articles, which means is either part of or in addition to one of the conveyor sections referred to in the definition of subclass 434.

447 This subclass is indented under subclass 445. Apparatus wherein said articles from said two or more successions of articles are interspersed to form only one succession of articles.

(1) Note. In this subclass the original source of articles is usually a random mass of articles. The articles are first arranged into plural streams, which streams are then rearranged into one stream. Compare this subclass with subclass 448 wherein the original source is a plurality of streams.

SEE OR SEARCH THIS CLASS, SUBCLASS:
448, and see (1) Note above.

448 This subclass is indented under subclass 443. Apparatus wherein said supply of articles comprises two or more successions of articles, and wherein said articles from said successions are interspersed to form only one succession of articles.

SEE OR SEARCH THIS CLASS, SUBCLASS:
447, and see (1) Note therein.

449 This subclass is indented under subclass 448. Apparatus provided with a plurality of components that are connected together and moved in a closed-loop path such that each component is followed by and preceded by another component, and a part of said closed-loop path coinciding with a path of one of the successions of articles referred to in the definition of subclass 443, each component having the function of contacting one article of a succession thereof, whereby said article will be caused to partake of movement that is imparted to said component at least while said paths coincide.

450 This subclass is indented under subclass 449. Apparatus wherein the closed-loop path is a circle, and the components follow the circular path.

451 This subclass is indented under subclass 448. Apparatus provided with barrier means that may be inserted into or removed from the course of movement of each of the successions of articles, thereby to regulate the passage of articles past the barrier means of each succession and permit the orderly interspersion of articles from each of the successions of articles into one said succession of articles.

452 This subclass is indented under subclass 448. Apparatus provided with a member that may be positioned to intersect the course of movement of each of the succession of articles, or not intersect such course of movement, which member diverts an article from one of such successions when it is caused to intersect such course of movement.

453 This subclass is indented under subclass 443. Apparatus wherein the supply of articles is a random or haphazard arrangement, and the apparatus is provided with a passageway between the supply and the succession of articles to be formed, which passageway permits the passage of only one article at a time, and the apparatus includes means for moving articles successively through the passageway.

(1) Note. The article-moving means may be one of the conveyor sections needed to form a conveyor system, or may be a conveyor section additional thereto.

454 This subclass is indented under subclass 453. Apparatus provided with structure additional to said article-moving means, which additional structure includes a face or area that contacts the articles passing thereby, and which additional structure is moved relative to the movement of the article-moving means.

(1) Note. The additional movement may be at right angles to or in the direction of movement of the stream, but the purpose is to facilitate passage of single articles in succession. For additional movement counter to the direction of stream movement (either unidirectional or vibratory) see subclass 455 indented hereunder.

455 This subclass is indented under subclass 454. Apparatus wherein the movement of the additional structure is in a direction opposite to the direction of movement of the succession of articles.

(1) Note. See (1) Note to subclass 454 for exemplary movements for this subclass.

456 This subclass is indented under subclass 434. Apparatus wherein a succession of articles moves along a path in a particular direction of movement, and wherein the articles are successively shunted in a direction transverse to, or raised or lowered with respect to, said particular direction to change either the path or the direction of movement of the succession of articles.

(1) Note. The movement of the succession of articles after the transverse shunting can be either a) along a new path that is substantially parallel to the original particular direction, or b) along a new path that is transverse to, or inclined relative to, the the original particular direction, or c) along a new path that is vertical or vertically inclined.

457.01 To change direction of longitudinally moving stream:

This subclass is indented under subclass 456. Subject matter wherein the direction of movement of the succession of articles after they have been successively shunted is along a new path that is transverse to, or inclined relative to, the original particular direction of movement.

(1) Note. Included in this subclass is apparatus wherein each of the articles is successively shunted in a transverse direction, and each is successively shunted into a new path that is parallel to the old path, laterally displaced from the old path, and in a direction reverse to the old path. In brief, each article follows a "U-shaped" path.

(2) Note. Structure for this subclass includes a first conveyor for moving articles in a first direction and delivering the articles to a second conveyor that moves the articles in a different direction. In such structure the claimed disclosure of the patent is important to the proper placement of the patent for original and cross-reference purposes. If the attitude of the successive articles relative to the conveyors is not significant (i.e., not claimed or particularly disclosed), the patent disclosing such conveyor structure is properly placed in this subclass as an original. If the attitude of the successive articles is significant (e.g., a claim recites a turning of the conveyor article), the effect of such turning should be considered for placement. If the turning of the article relative to the conveyors is such that on the first conveyor a particular face is headed in the conveyed direction and during turning, and when on the second conveyor said particular face is still headed in the conveyed direction, then its attitude relative to its conveyed direction has not been changed; a patent claiming such "turning" is proper for original placement in this subclass. If the turning of the article is such that on the first conveyor a particular face is headed in the conveyed direction, and if during turning or when on the second conveyor a different face is headed in the conveyed direction then its attitude relative to its conveyed direction has been changed; a patent claiming such turning is proper for original placement in subclasses 373+.

457.02 Item supporting rollers cause direction change:

This subclass is indented under subclass 457.01. Subject matter wherein the conveyor includes rotating cylindrical members and the members support the article and causes a change in a direction of movement of the article.

457.03 Item supporting endless belt causes direction change:

This subclass is indented under subclass 457.01. subject matter wherein the conveyor includes a continuous band of flexible material (e.g., leather, rubber, fabric) or a continuous band constructed of links of metal, plastic or similar material and the band supports the article and causes a change in a direction of movement of the article.

457.04 Item supporting screw causes direction change:

This subclass is indented under subclass 457.01. Subject matter wherein the conveyor includes a conveying section comprising a helical surface formation which is rotated about its longitudinal axis and the surface supports the article and causes a change in a direction of movement of the article.

457.05 Fixed guide causes direction change:

This subclass is indented under subclass 457.01. Subject matter wherein the conveyor includes a member which is mechanically fastened or secured in place and causes a change in a direction of movement of the article.

457.06 Nonsupporting endless belt causes direction change:

This subclass is indented under subclass 457.01. subject matter wherein the conveyor includes a continuous band of flexible material or a continuous band constructed of links of metal, plastic or similar material and the article is supported independently of the band and the conveyor causes a change in a direction of movement of the article.

457.07 Nonsupporting rotary member causes direction change:
This subclass is indented under subclass 457.01. Subject matter wherein the conveyor includes a member which turns on an axis and the article is supported independently of the member and the conveyor causes a change in a direction of movement of the article.

458 This subclass is indented under subclass 456. Apparatus wherein at least two successions of articles move along a corresponding number of substantially parallel paths in a particular direction of movement, and wherein the articles of at least one of said successions are successively shunted in a direction transverse to said particular direction, whereby the distance between the successions of articles after the shunting is different from the distance between the successions before the shunting.

459.1 By longitudinally respacing successive articles in stream:
This subclass is indented under subclass 434. Subject matter wherein a series of loads are repositioned or relocated lengthwise in a timely and properly spaced order.

459.2 Rotating star wheel:
This subclass is indented under subclass 459.1. Subject matter wherein a change in the load position is effected by the engagement of the load with a revolving member having an alternate arm and recess or having a plurality of radially disposed fingers.

459.3 Rotating screw:
This subclass is indented under subclass 459.1. Subject matter wherein the change in the article spacing is effected by a revolving member which turns about its axis and includes a body of cylindrical form having a plurality of helical or spiral ribs or threads.

459.4 Varying pitch:
This subclass is indented under subclass 459.3. Subject matter wherein a distance between a point on one of the threads of the rotating screw and a corresponding point on an adjacent thread is different.

459.5 Fixed obstruction and means for moving articles over or around the obstruction:
This subclass is indented under subclass 459.1. Subject matter wherein a stationary barrier to the movement of the loads is overcome by a means which elevates or advances laterally a leading load relative to the barrier to permit further movement.

SEE OR SEARCH THIS CLASS, SUBCLASS:
463.5, for a similar barrier.

459.6 Movable gate:
This subclass is indented under subclass 459.1. Subject matter wherein a barrier changes its position into the conveying path to retard or stop the load and the barrier is retractable to resume the load position to provide predetermined longitudinal spacing between the adjacent loads.

SEE OR SEARCH THIS CLASS, SUBCLASS:
463.4, for a similar gate.

459.7 Plural:
This subclass is indented under subclass 459.6. Subject matter including two or more barriers.

SEE OR SEARCH THIS CLASS, SUBCLASS:
463.6, for a similar gate.

459.8 Endless or rotary conveyor having zone of varying speed:
This subclass is indented under subclass 459.1. Subject matter wherein a continuous or revolving carrier includes a load carrying roller or similar element contacting the loads and changing the relative spacings of the articles by temporarily increasing or decreasing the rate of motion of the contacted articles.

460.1 With space-control means responsive to article sensing means:
This subclass is indented under subclass 459.1. Subject matter including means for detecting the presence or absence, or other condition, of the loads of the succession, and including means for regulating or changing the operation of the conveyor to change the distance between

the successive loads as a result of the condition detected by the detecting means.

460.2 Variable conveying length conveyor:
This subclass is indented under subclass 460.1. Subject matter wherein the detecting means automatically changes the effective carrying distance along the path of travel to delay or speed up the time of discharge or receipt of the loads.

460.3 To crowd or imbricate:
This subclass is indented under subclass 460.1. Subject matter including means for automatically controlling the conveyor system for (a) decreasing the spacing between the loads or (b) overlapping one load partly over the adjacent load in a predetermined spacing arrangement.

SEE OR SEARCH THIS CLASS, SUBCLASS:
462.1+, for crowding or imbricating without a sensor.

461.1 By successive conveyors having dissimilar speeds:
This subclass is indented under subclass 459.1. Subject matter wherein a change in the spacing between the loads is effected during a passage of the loads from one portion of the carrier to the adjacent portion of the carrier, and the change is caused by a difference in the rate of movement of the carrier portions relative to each other.

461.2 Conveyors having increased speeds only:
This subclass is indented under subclass 461.1. Subject matter wherein each downstream carrier moves faster than the upstream carrier.

461.3 Belt or chain conveyors only:
This subclass is indented under subclass 461.2. Subject matter wherein the carriers consist only of continuous bands of flexible material or continuous bands constructed of links of metal or plastic or similar material.

462.1 To crowd or imbricate articles:
This subclass is indented under subclass 461.1. Subject matter wherein at least one of the conveyors is driven at a speed to (a) cause a decreased spacing between the loads or (b) cause one load to partly overlap the adjacent load in a predetermined spacing arrangement.

SEE OR SEARCH THIS CLASS, SUBCLASS:
460.3, for an article sensing means controlling a crowding or imbricating.

462.2 Articles imbricated:
This subclass is indented under subclass 462.1. Subject matter wherein at least one of the conveyors is driven at a speed to cause one load to overlap the adjacent load in a predetermined spacing arrangement.

462.3 Crowding by endless belts or chain conveyors only:
This subclass is indented under subclass 462.1. Subject matter wherein the decreased spacing is caused only by continuous load carriers made of bands of flexible material or bands constructed of links of metal or plastic or similar material.

463.1 CONVEYOR SYSTEM FOR MOVING A SPECIFIC LOAD AS A SEPARATE UNIT:
This subclass is indented under the class definition. Apparatus including at least two conveyor sections cooperating for the purpose of conveying one portion of material, one article or one group of articles as a unit separate from other portions or articles.

SEE OR SEARCH THIS CLASS, SUBCLASS:
418+, for plural conveyor sections cooperating to form a group of items into a unit from a mass or a plurality of sources of items.
434+, for plural conveyor sections cooperating to move articles in a particular continuous arrangement such as a stream of articles instead of as a separate unit.

463.2 System includes a linear conveyor or portion thereof which bodily shifts transversely to move a load in synchronization with a transverse continuously operating conveyor section:
This subclass is indented under subclass 463.1. Apparatus wherein the system includes a conveyor driven to convey a load in a straight line and in addition is in whole or part bodily shifted sidewise to its direction of conveyance in synchronization with a transverse, continu-

ously operating conveyor such that the load can be transferred between conveyors without halting article movement.

SEE OR SEARCH THIS CLASS, SUBCLASS:
631.1+, for conveyor adjustably mounted for extra conveying function.

463.3 System includes linear conveyor or portion thereof which shifts to lift or lower load before or after linearly conveying load relative to adjacent conveyor section:
This subclass is indented under subclass 463.1. Apparatus wherein the system includes a conveyor, which normally conveys a load in a straight line, which in whole or part bodily shifts to elevator or depress the load prior to or following having conveyed the load relative to an adjacent conveyor section.

SEE OR SEARCH THIS CLASS, SUBCLASS:
631.1+, for conveyor adjustably mounted for extra conveying function.

463.4 System includes gate means:
This subclass is indented under subclass 463.1. Apparatus wherein the system includes a barrier which may be inserted into or removed from the course of movement of the load moving along the system to regulate the movement of the load from one conveyor to another in the system.

SEE OR SEARCH THIS CLASS, SUBCLASS:
425, for gates used to form a unit from a stream of articles.
451, for gates used to merge plural streams into one stream.
459.1+, for gates used to space articles in a stream.

463.5 Load obstructing gate and means for lifting load over the obstruction:
This subclass is indented under subclass 463.4. Apparatus wherein the system includes a barrier to the movement of articles and a means which elevates at least the leading unit over the barrier to permit further movement of said unit along the system.

463.6 Plural successively operated gate means:
This subclass is indented under subclass 463.4. Apparatus wherein the system includes two or more barriers which are sequentially operated.

464.1 System includes control means responsive to sensing means:
This subclass is indented under subclass 463.1. Apparatus wherein the system includes means for detecting a condition of a conveyor system or of the load carried thereon, or of the environment in which the system operates and includes means for regulating or changing the operation of said system in response to the detecting means.

464.2 Responsive to load presence or absence:
Apparatus under 464.1 wherein the detecting means is actuated by the existence or nonexistence of the load.

464.3 Responsive to condition of at least one conveyor:
This subclass is indented under subclass 464.2. Apparatus wherein the detecting means is responsive to a condition (e.g., position, speed, etc.) of one conveyor of the system in addition to the existence or nonexistence of the load.

464.4 Responsive to undesired condition of load:
This subclass is indented under subclass 464.1. Apparatus wherein the detecting means determines an unwelcome condition of the load such as a jam.

(1) Note. Sensing load orientation or attitude is found in subclass 395 of this class.

465.1 System includes a load supported by a conveyor portion which is separable from the conveyor drive:
This subclass is indented under subclass 463.1. Apparatus wherein the load is supported by a reusable carrier (conveyor portion) which is frictionally or positively driven by a drive means and is disengagable therefrom.

SEE OR SEARCH THIS CLASS, SUBCLASS:
803.1, for separable carriers used with a single conveyor.

465.2 Wherein the conveyor portion moves in a closed path in the horizontal plane only:
This subclass is indented under subclass 465.1. Apparatus wherein the load carrier portion is moved only in a closed path in the longitudinal plane by one or more separate carrier drives.

465.3 Wherein the conveyor portion is supported and driven adjacent its opposite sides by horizontally spaced drives:
This subclass is indented under subclass 465.1. Apparatus wherein the load carrier portion is driven by longitudinal spaced drives which engage opposite sides of the portion.

SEE OR SEARCH THIS CLASS, SUBCLASS:
681, and 803.2, for carriers supporting loads between horizontally spaced drives.

465.4 Wherein the conveyor portion supports the load below the drive:
This subclass is indented under subclass 465.1. Apparatus wherein the load carrier portion engages the load at a point below to the location of engagement of the load carrier by its drive means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
681, for carriers which engage load below the location of engagement between the carrier and the carrier drive.

466.1 System includes a T-shaped or headed load suspended between parallel conveyors directly:
This subclass is indented under subclass 463.1. Apparatus wherein a load which is so proportioned that with respect to a major dimension thereof a first portion extending perpendicular to the dimension at one end thereof is larger then a second portion extending perpendicular to the dimension at the other end, and wherein the conveyor section is provided with at least two horizontally spaced rails or conveyors that the load will move along the conveyor sections with the first portion above the rails or conveyors and the second portion hung from the below the rails or conveyors.

(1) Note. Changing the attitude of a load by horizontal spaced rails or conveyors if found is subclass 389 of this class.

467.1 System includes a rotating screw:
This subclass is indented under subclass 463.1. Apparatus wherein one of the conveyor sections includes a member which turns about its axis and has a helical surface which is shaped to extend radially of and simultaneously advance longitudinally of said axis whereby the turning member engages the load and advance it parallel to the axis.

468.01 System includes an oscillating or reciprocating load engaging element:
This subclass is indented under subclass 463.1. Apparatus wherein one of the conveyor sections comprises a component which is connected to an actuator that imparts to-and-fro motion in a path, at least a part of which path coincides with a part of the path load being conveyed, the component having the function of contacting the load whereby said load will partake of movement imparted to said component at lest while said paths coincide.

468.1 Element pushes load over separate support and has nonlinear path of travel:
This subclass is indented under subclass 468.9. Apparatus wherein the load is supported by a distinct support as it is pushed by the load engaging component which travels in a curvilinear or orbital path.

468.11 Element pushes load over separate support and has linear path of travel:
This subclass is indented under subclass 468.9. Apparatus wherein the load is supported by a separate support as it is pushed by the engaging component which travels in a straight line path.

468.2 Comprising load gripping elements:
This subclass is indented under subclass 468.01. Apparatus wherein the load engaging component positively holds or attracts the load by friction, or by use of a force field, or by fluid current.

SEE OR SEARCH THIS CLASS, SUBCLASS:
750.11, for reciprocating conveyor section having a reciprocating gripper.

468.3 Gripping elements movable relative to one another to space articles in the load:
This subclass is indented under subclass 468.2. Apparatus wherein the load engaging components are relatively movable to move one portion of the load with respect to other portion(s) thereof.

468.4 Suction gripping elements:
This subclass is indented under subclass 468.2. Apparatus wherein the load gripping member comprises a gaseous medium under subatmospheric pressure to hold the load during conveyance.

SEE OR SEARCH THIS CLASS, SUBCLASS:
750.12, for reciprocating conveyor section having a reciprocating suction gripper.

468.5 Magnetic or electrostatic gripping elements:
This subclass is indented under subclass 468.2. Apparatus wherein the load gripping member uses lines of magnetic flux or an electric force field to hold the load during conveyance.

SEE OR SEARCH THIS CLASS, SUBCLASS:
750.13, for reciprocating conveyor section having a reciprocating magnetic or electrostatic gripper.

468.6 Engaging element moves load vertically and horizontally:
This subclass is indented under subclass 468.01. Apparatus wherein the load compact moves the load simultaneously in both a raised or lowered position in a plane generally parallel with the ground.

SEE OR SEARCH THIS CLASS, SUBCLASS:
750.14, for reciprocating conveyor section having a reciprocating surface which carries a load horizontally and vertically for one cycle only.

468.7 Element pushes load over nonlinear support:
This subclass is indented under subclass 468.6. Apparatus wherein the load is supported during conveying by a separate support with a horizontally and vertically extending supporting surfaces and the engaging component propels the load over said supporting surface.

468.8 Engaging element moves load vertically only:
This subclass is indented under subclass 468.01. Apparatus wherein the load is only moved in a raised or lowered position by the load engaging component.

468.9 Engaging element moves load horizontally in a straight line:
This subclass is indented under subclass 468.01. Apparatus wherein the load is only moved in a straight line in a plane generally parallel to the ground by the load engaging component.

469.1 System includes a rotating or endless carrier with a load engaging element:
This subclass is indented under subclass 463.1. Apparatus wherein at least one conveyor comprises a plurality of load contacting components spaced about and attached to a drive member which moves in a closed loop or a belt movable continuously along a path defined by the longitudinal axis.

470.1 Comprising a load gripping element:
This subclass is indented under subclass 469.1. Apparatus wherein the load engaging components are mounted on a rotating or endless drive which holds or attracts the load by friction or by use of a force field, or by fluid current or wherein at least one component is used to attract the load by a force field or fluid pressure difference on a rotating endless conveyor.

SEE OR SEARCH THIS CLASS, SUBCLASS:
803.3, for grippers mounted on a single rotary or endless conveyor.

471.1 Suction gripping element:
This subclass is indented under subclass 470.1. Apparatus wherein the load engaging component or attracting means comprises a gaseous medium under subatmospheric pressure to hold the load during conveyance.

SEE OR SEARCH THIS CLASS, SUBCLASS:

689.1, for conveyor section using suction to enhance friction between the load and the conveyor.

803.5, for a conveyor section having suction holders.

472.1 Magnetic or electrostatic gripping element:
This subclass is indented under subclass 470.1. Apparatus wherein the load engaging or attracting element uses lines of magnetic flux or an electric force field to hold the load during conveyance.

SEE OR SEARCH THIS CLASS, SUBCLASS:

690.1, and 691, for conveyor section using magnetic or electrostatic forces to enhance frictional contact between the load and the conveyor.

803.6, for a conveyor section with magnetic or electrostatic holders.

473.1 Nongripping elements are adjustable or replaceable for different sized loads:
This subclass is indented under subclass 469.1. Apparatus wherein the load engaging component attached to the rotating or endless drives do not grip the load and are adaptable or changeable to accommodate different sized loads.

SEE OR SEARCH THIS CLASS, SUBCLASS:

803.11, for a conveyor section with replaceable or adjustable holders for different sized loads.

474.1 With means to move load engaging elements relative to carrier:
This subclass is indented under subclass 469.1. Apparatus wherein the load engaging components are provided with means to cause said load contacting components to have motion relative to its drive member.

475.1 Whereby the load engaging component moves relative to the carrier to maintain load in a desired position during travel along a curved path:
This subclass is indented under subclass 474.1. Apparatus wherein the load engaging component is moved relative to the drive member such that the load is maintained in the same attitude during travel of the load engaging component along a circuitous path.

476.1 Element is shifted to discharge or receive a load:
This subclass is indented under subclass 474.1. Apparatus wherein the load engaging element is movable relative to the drive member for the purpose of ejecting or receipt of a load.

477.1 Element is only shifted with the load during discharge:
This subclass is indented under subclass 476.1. Apparatus wherein the load engaging component is only movable relative to the drive member to eject the load.

478.1 Carrier rotates about a fixed axis:
This subclass is indented under subclass 469.1. Apparatus wherein the load engaging components are attached to a fixed member traveling in a closed loop path.

479.1 Elements push the load over a separate support:
This subclass is indented under subclass 478.1. Apparatus wherein the load is supported by distinct means and the load engaging component propels the load over said distinct means.

480.1 With a load retaining guard means:
This subclass is indented under subclass 479.1. Apparatus wherein the load is additionally contacted or guided by a guide or fence which is spaced from the rotating load drive at a distance sufficient to permit a load to be conveyed by said drive member as it is pushed over the separate support without permitting the load to escape therefrom.

481.1 With load retaining guard means:
This subclass is indented under subclass 478.1. Apparatus provided with a guide or fence which is spaced from the rotating load drive member at a distance sufficient to permit a load to be conveyed by said driven members without unintended escape therefrom.

482.1 Means mounted on the engaging element to forceable eject the load from the element:
This subclass is indented under subclass 469.1. Apparatus wherein each load contacting component includes a forcing means to expel the load from the element.

483.1 Means movably mounted inside the path of the element to eject the load:
This subclass is indented under subclass 470.1. Apparatus wherein the rotating or endless conveyor has a moveably mounted means located within the orbital path of the load engaging elements to engage and discharge the load from the load engaging elements.

484.1 Elements comprise a nongripping pair of members which self-open as they pass through a curved path:
This subclass is indented under subclass 469.1. Apparatus wherein the load engaging elements are formed by a pair of opposed member which cooperate to contain the load without gripping during linear travel and which pivot or flex relative to one another to permit receipt or discharge of the load.

SEE OR SEARCH THIS CLASS, SUBCLASS:
803.13, for a conveyor section with nongripping self-opening holders.

485.1 Nongripping elements support the load below the endless carrier:
This subclass is indented under subclass 469.1. Apparatus wherein the load engaging elements contact the load without gripping said load at a point below the location of connection of the elements to the rotating or endless drive.

486.1 Elements are hooks:
This subclass is indented under subclass 485.1. Apparatus wherein the nongripping load engaging elements are curved or angular pieces of hard material.

487.1 Nongripping elements are laterally projecting pins which engage the interior of a hollow load:
This subclass is indented under subclass 469.1. Apparatus wherein the load has a cavity and the load engaging elements are pins which engage said load cavity without gripping and which project sidewise from the drive member.

SEE OR SEARCH THIS CLASS, SUBCLASS:
803.12, for conveyor section with means to engage the interior of a hollow load.

493 This subclass is indented under the class definition. Apparatus wherein a conveying section has means associated therewith which will a) shift a load on, supply a load to, or remove a load from the conveying section by contacting the load with a stream of moving fluid, b) remove detritus or other unwanted material from the section or some part thereof, c) maintain the cleanliness of the section, d) place the section or a portion thereof in an aseptic condition, or e) provide grease, oil, or other lubricant thereto to facilitate the operation of the section.

(1) Note. Conveyors having cabinets with or without ventilating means to prevent contamination of the conveyor or its load will be found herein.

SEE OR SEARCH CLASS:
15, Brushing, Scrubbing, and General Cleaning, appropriate subclass, for cleaning implements of general utility and for cleaning implements specialized for use on conveyors, but which are not adapted to be mounted on an operating conveyor.
184, Lubrication, appropriate subclass, especially subclasses 15.1+, for lubricating systems and devices, per se, or combined with a nominal conveyor.
384, Bearings, subclasses 418+ for a bearing and support means for roller elements which may be used with power conveyors.
406, Conveyors: Fluid Current, subclasses 51+ for apparatus by which the load is moved by contact from a power-driven surface and by a fluid current, either simultaneously or alternately.

494 This subclass is indented under subclass 493. Apparatus wherein the section is provided with means which is positioned so that it can directly act on the section, or some part thereof, to remove soil or other unwanted or undesirable material therefrom.

(1) Note. The cleaning means is structure, in addition to that which is normally used to discharge the load. This additional structure may discharge the unwanted material to the same area that the load is delivered to if the unwanted material is of the same material as the load. For example, belt conveyors are often provided with a cleaning implement located immediately downstream of the load discharge point, which implement strikes off load adhering to the belt beyond the discharge zone. This adhering load must be removed as it could have a deleterious effect on the conveyor; however, such material obviously could be carried along with the discharged load without contaminating the same. In fact, if the adhering load was not rejoined with the discharged load, material would be wasted. In such arrangements, the adhering load is, in fact, rejoined with the discharged load.

495 This subclass is indented under subclass 494. Apparatus wherein the means for removing the unwanted material includes means for contacting the section with a fluid.

(1) Note. Examples of structures to be found herein are a) fluid spraying nozzles which impinge the section with a stream liquid or gas to remove undesired material therefrom, as opposed to impinging means for discharging the load from the conveying section, b) vacuum applying means relying on the sweeping action of a stream of atmospheric gas, e.g., air, or c) tanks into which the section dips, or which carry liquid transferring means which, in turn, contact the section.

SEE OR SEARCH CLASS:

134, Cleaning and Liquid Contact With Solids, appropriate subclass, for processes of cleaning, and for apparatus which clean a work piece by contacting said work piece with a liquid.

496 This subclass is indented under subclass 494. Apparatus wherein the means for removing the undesired material includes a bristle carrying means which contacts the section, or a portion thereof, to sweep such material therefrom.

497 This subclass is indented under subclass 494. Apparatus wherein the means for removing the unwanted material includes a blade-like member which engages some portion of the section, and which is effective to dislodge such unwanted material therefrom.

498 This subclass is indented under subclass 497. Apparatus wherein means are provided which mount the blade-like member for movement relative to the section, or section portion, to effect or facilitate removal of unwanted material therefrom.

(1) Note. Movable conveyor flight cleaners for barn-cleaning conveyors will be found herein.

499 This subclass is indented under subclass 497. Apparatus wherein the means for removing the unwanted material includes means which urge the blade-like member into contact with the surface to be cleaned.

500 This subclass is indented under subclass 493. Apparatus wherein the section, or some part thereof, has means providing grease, oil, or some other lubricant thereto, to promote efficiency in the operation of the section.

SEE OR SEARCH THIS CLASS, SUBCLASS:

721, for a pusher-type conveyor having means to facilitate movement of the load across its supporting surface.

811, for endless belt-type conveyors provided with means for forming an air cushion between the belt and its supporting structure to facilitate movement of the belt.

501 This subclass is indented under subclass 500. Apparatus wherein the section is of the troughed belt type having support structure employing a plurality of drum-like members which are arranged to contact and deflect the belt into an open channel shape, and wherein the lubricant providing means communicates with bearings carried by the drum-like members to insure free turning of said members.

SEE OR SEARCH THIS CLASS, SUBCLASS:

824+, for belt-type conveyors having roller assemblies for troughing the belt thereof.

502.1 WITH ALARM OR INDICATOR:

This subclass is indented under the class definition. Subject matter including means for (1), warning an attendant of an undesirable conveyor operating condition (2), indicating the operating mode of conveyor (3), indicating dimensions of load or (4), indicating the position of a moving or recently moved load along a conveying path.

(1) Note. Specific Conveying functions (orienting articles, grouping articles, etc.) which are in combination with nominal weighing means should be classified in the appropriate conveying function subclass in Class 198.

SEE OR SEARCH THIS CLASS, SUBCLASS:

464.1, through 464.3, and 571-577, for controls for article movement on conveyor systems.

464.4, for conveying systems having indicators for undesirable conditions.

810.01+, for the combination of an endless belt and a sensor for articles, belt damage, belt tracking, or belt tension.

958, for conveyors in combination with a load unit counter.

959, for conveyors in combination with weighing.

SEE OR SEARCH CLASS:

177, Weighing Scales, and Class 222, Dispensing, for specific weighers in combination with conveying means.

235, Registers, subclasses 98+ or Class 377, subclasses 6+ for conveyors and article counting means.

502.2 Means for measuring dimensions (height, width, or length) of load on a conveyor:

This subclass is indented under subclass 502.01. Apparatus wherein the physical proportions of the load are detected while the load is on a conveyor.

502.3 Means for indicating position of unit load:

This subclass is indented under subclass 502.1. Apparatus wherein the physical location of the load is tracked and indicated as it moves along the conveyor path.

502.4 Means responsive to conveyor movement to indicate speed or to actuate alarm due to abnormal speed:

This subclass is indented under subclass 502.1. Apparatus wherein means senses the velocity of the conveyor movement and displays said velocity or actuates means warning on attendant if the velocity is erratic.

506 This subclass is indented under the class definition. Device wherein a conveying section is provided with means which particularizes the section either to gather material scattered on a stationary-supported surface, e.g., the ground, or to remove material from a mound or pile of such material located on such a surface.

(1) Note. The term static support, as used herein, means a surface that is stationary, or generally stationary, at the time material is removed therefrom. Thus, a stopped railway car or a moored ship is considered a static support for purposes of classification in this subclass.

(2) Note. Water in a well is not considered to be material scattered on a stationary support surface, nor is it considered to be a mound or pile of material.

SEE OR SEARCH THIS CLASS, SUBCLASS:

700, 702 and 715, for a driven conveyor of the bucket type which is particularly adapted to convey liquid, and wherein the source of liquid frequently is an entrapped, stationary body of water (e.g., a well, etc.).

SEE OR SEARCH CLASS:

15, Brushing, Scrubbing, and General Cleaning, subclasses 78+, for street cleaners which are loading devices, including brushes or flexible members to aid in the loading. If the conveyor and its support only are claimed, or its support only is claimed, and if it oth-

erwise meets the definition of this class (198), the patent should be placed in this Class.

37, Excavating, appropriate subclass, for conveyors particularly adapted for in situ digging, where the surface of the earth is penetrated. If no actual digging element, as teeth, wheel, plow, scoop, or the like, is claimed, and if the conveyor is not particularly adapted to trench, the patent should be placed in this class (198). If other provided for operation, e.g., melting snow, are included, the patent should be placed in Class 37. If the conveyor is useful to handle loose material, the patent should be placed in this class (198). If the presence of a wagon to be loaded is essential to the intended operation of the device, the patent should be placed in either Class 37 or Class 414, Material or Article Handling.

56, Harvesters, appropriate subclasses, especially 16.4+, 71+, 153+, and 345+, for conveyors combined with other harvester structure, or for conveyors limited to use on harvesters. The line between conveyors of the type provided for in subclass 506 and those provided for in Class 56, which are of the raking and loading type, is that where tines, prongs, or the like, are the raking means and the apparatus is particularly designed for continuous raking up of loose crop material while moving over a field, or if it can be so used without modification, the patent is placed in Class 56.

171, Unearthing Plants or Buried Objects, appropriate subclasses, especially 31+, 63+, 89, 110, 111+, and 138, for excavating and loading machines of the type having a scoop or rake delivering to a power-driven conveyor. Class 171 further provides for conveyors which (1) are used to dig, convey, and separate from the earth desired objects, (2) are combined with digging or excavating means and function to separate from the soil flowing from the digging or excavating means from the desired plant or buried object, or (3) are combined with an unearthing device and function merely to feed material to or from such devices.

299, Mining or In Situ Disintegration of Hard Material, subclasses 64+, for hard material disintegrating machines having material-handling means.

507 This subclass is indented under subclass 506. Device wherein the conveying section is provided with means to regulate the operation of the section, or of some part thereof, which means includes means to sense a) an undesirable operating characteristic of the section, or b) a property or characteristic of the conveyed load.

(1) Note. Undesirable operating characteristics of a conveying section includes conditions which are potentially dangerous to machine operators or to those in the vicinity of the machine, or conditions which might cause damage to the conveying section, or some part thereof.

508 This subclass is indented under subclass 506. Apparatus wherein the section is provided with means which enables the section to form a mound of material on a stationary supporting surface.

509 This subclass is indented under subclass 506. Device wherein the particularizing means for the conveying section comprises an orbiting progression of load confining receptacles, each of which intermittently engages material on the static support, and each of which removes a volumetrically confined discrete load unit of the material from the support.

SEE OR SEARCH THIS CLASS, SUBCLASS:

701+, for bucket conveyors in general, subclass 700, for bucket members carried by a freely hanging, endless member, and subclass 715, for flexible pocket conveying members.

510.1 Power-driven feed means:
This subclass is indented under subclass 506. Device wherein the particularizing means includes a driven-load transferring device which is located at the entrance to a conveying section, and which acts on the material on the

static support to compel the material onto the section.

(1) Note. A feeding means is an apparatus which is structurally similar to a conveying section, but which assumes an ancillary role due to its position with respect to the section served. It is present merely to enhance or improve the operation of the section served.

511 This subclass is indented under subclass 510.1. Apparatus wherein the power-driven feeding means is mounted to move in a plane normal to the horizon to any one of a plurality of desired positions, such that the feeding means will be maintained in contact with a receding pile of material.

SEE OR SEARCH THIS CLASS, SUBCLASS:

519, for a conveyor having means mounting the conveyor for pile surface attack.

589, and 592+, for plural power-driven conveyors with means mounting a section to swing about a generally horizontal axis.

861.1+, for a conveyor frame which may be adjustable or mounted for swinging.

512 This subclass is indented under subclass 510.1. Device wherein the particularizing means includes a set of two load transferring devices which are adapted to be positioned on opposite sides of the entrance to a conveying section, and which devices coact with each other to move the material therebetween and onto the section.

513 This subclass is indented under subclass 512. Device wherein the set of transfer devices includes two rotating members, each of which has a helical wound load engaging flight extending around and along its axis of rotation, each flight being configured to move material in a direction opposite to the direction of material movement in the other flight so that the material is fed by both members towards a central delivery point at which a conveying section is adapted to be located.

514 This subclass is indented under subclass 512. Apparatus wherein each of the load transferring devices has a material contacting member which is swept across a load support surface common to both devices to cause the movement of the material therebetween.

515 This subclass is indented under subclass 514. Apparatus wherein each transfer device includes a plurality of material contacting members which are moved in a closed path.

516 This subclass is indented under subclass 515. Apparatus wherein the plurality of material contacting members are secured to, and moved by, a flexible band-like member.

517 This subclass is indented under subclass 510.1. Apparatus wherein the particularizing means includes a plate-like member which sweeps across the material supporting surface to draw material towards the conveying section.

518 This subclass is indented under subclass 510.1. Apparatus wherein the particularizing means includes a load transferring device which turns about an axis of rotation and which engages and compels the material to move into the entrance of a conveying section by following a path which is coincident with or tangent to the path described by the periphery of the rotating device.

519 This subclass is indented under subclass 506. Device wherein the conveying section is provided with means which enable the section's conveying member to engage and to remain in contact with the surface of a mound of loose material so that the section can continue to remove material from the mound as its surface recedes.

520 This subclass is indented under subclass 506. Apparatus including a conveying section having a material contacting member which sweeps across a load-supporting surface, said section being configured such that it is capable of either collecting loose bulk material scattered on a supporting surface, e.g., the ground, or separating the bulk material from a mass of loose material, e.g., a pile of coal.

521 This subclass is indented under subclass 506. Apparatus wherein the conveying section is a generally channel-shaped element which is adapted to be rapidly reciprocated to and fro, and which has a material inlet designed to facilitate removal of the load from the ground.

522 This subclass is indented under subclass 506. Apparatus wherein the section is provided with means forming an entrance for the section, which means acts to guide material from the static support to the section.

523 This subclass is indented under the class definition. Apparatus comprising a conveyor system consisting of at least one gravity conveyor section and at least one power-driven conveyor section in any sequence. Devices (e.g., gates, etc.) appurtenant to either section, or otherwise forming a part of the system, are included.

(1) Note. "Gravity conveyor section" is a term embracing structures which support, or guide, or otherwise define a flow path for material which is moving from one elevation to another under the influence of gravity. Art terms such as "hopper", "chute", etc., frequently are indicative of a gravity aspect, but their usage is sufficiently inconsistent as to be nondefinitive thereof.

(2) Note. Gravity conveyor sections are of two principal kinds: (1) gravity discharge material holders (the art term "hopper" occasionally corresponds), and (2) gravity flow paths (the art term "chute" frequently corresponds).

A gravity discharge material holder is primarily a storage device having a vertically (or predominantly so) downward discharge path. No specific "bottom" structure need be claimed as long as it is apparent that material may be supported therein for an interval somewhat longer than that required for mere passage therethrough, i.e., that the device is something more than a funnel. If the device is a holder by these criteria, the claiming of flow-inducing internal structure (e.g., "downwardly and inwardly sloping sidewalls", etc.) is irrelevant.

A gravity flow path is an inclined structure which supports and/or guides material moving therealong or therethrough under the influence of gravity. The inclination may vary from just above the horizontal to vertical, and the structure, often of a trough-like nature, may be anything from a surface (supporting, but not guiding the material) to a conduit (which, if vertical, guides, but does not support). (While the term "gravity flow path" is not specifically set forth in a subclass title until subclass 560, structure of this nature appears throughout this and the indented subclasses.)

(3) Note. When a gravity discharge material holder serves as a source of supply for the claimed system, it is more precisely identified in this and the indented subclasses as a "source of supply discharging by gravity" (or, more briefly, as a "gravity source"). This particular usage of a gravity discharge material holder is provided for in subclasses 540+ below.

(4) Note. Some material-containing receptacles (usually designated as a "hopper" or a "bin") found in this and the indented subclasses are not capable of discharging by gravity and, therefore, do not constitute gravity conveyor sections in the sense that gravity discharge material holders do. A power-driven conveyor section is provided within, or otherwise associated with, each such receptacle for removing (upwardly or laterally) the material therefrom. Where such a receptacle and conveyor, identified herein as a "bin with a power-driven conveyor section for discharging it", constitutes a source of supply for the claimed system, subclasses 550.01+ provides for the system; however, if it appears elsewhere in the system, it has only the status of its power-driven section.

One other usage of a receptacle appears occasionally in this and the indented subclasses, namely, as an element for receiving the material transported by the system. Having neither a capability for gravity discharge nor a power-driven

section for moving the material therefrom, it is treated as a mere receiver, for which no classification is provided. As a matter of fact, a receiver for this and the indented subclasses is not limited to a receptacle, but can be merely a surface.

(5) Note. Inasmuch as conveyor systems and sections for the conveying of articles usually are more adequately and specifically provided for in certain subclasses above, most of the art in this and the indented subclasses involves the conveying of bulk-type material (e.g., coal, sand, etc.).

524 This subclass is indented under subclass 523. Apparatus wherein the system includes means to sense a condition (or a change therein) which affects the operation of the system, and to cause a response thereto by one or more elements of the system.

525 This subclass is indented under subclass 523. Apparatus wherein the system includes means which has an effect (e.g., starting, maintaining, slowing, stopping, reshaping (e.g., leveling of bulk material), redirecting, regulating, etc.) upon the flow of the principal body of material entering, moving through, or leaving the system.

(1) Note. Usually the means is in the form of an element, member, device, etc., which is in addition to the conveyor sections; however, it may comprise a conveyor section, gravity or power-driven which has a mounting means of the kind whereby the section is adjustable, provided that the purpose of so mounting the section is to enable it to affect the flow of material.

SEE OR SEARCH THIS CLASS, SUBCLASS:

537, for a conveyor system under this heading which may include means to affect the flow of material which has become separated, whether purposely or otherwise, from the principal body of material.

633+, for a conveyor section provided with a passive means, which means, upon contact of the load therewith, changes the movement of the load with respect to the section.

526 This subclass is indented under subclass 525. Apparatus wherein the flow-affecting means comprises an element (or series of elements) which moves (e.g., orbitally, rotatably, etc.) through or within the path of flow from a gravity section to a power-driven section in timed relation with the movement of the power-driven section for the purpose of momentarily interfering with flow along that path at such times no one of the successive conveying elements (e.g., a bucket) of the power-driven section is properly positioned to receive the flow.

(1) Note. The means of this subclass (526) frequently is a series of traveling deflectors, each of which temporarily diverts or interrupts the flow, and which are more commonly referred to as “gap closers”. While such deflectors may, per se, constitute a gravity conveyor section (i.e., a gravity flow path), classification herein does not take into account either the presence or the absence of such a conveying function.

SEE OR SEARCH THIS CLASS, SUBCLASS:

708, for a conveyor section of the bucket type wherein a bucket is provided with structure to close a gap between it and the next successive bucket.

527 This subclass is indented under subclass 526. Apparatus wherein the moving means comprises a power-driven conveyor section.

(1) Note. The coordinated movement of the power-driven sections is sometimes utilized to control the duration of flow (e.g., gating), or to accomplish delivery from one to the other in a particular manner (e.g., with reduced shock, with less friction-developing speed differential, etc.).

SEE OR SEARCH THIS CLASS, SUBCLASS:

531, for a reciprocating, load-supporting element which, while sometimes identified as a “carrier”, and which may be spaced below the gravity sections, function more in the nature of a

gate than a power-driven conveyor section.

528 This subclass is indented under subclass 525. Apparatus wherein the flow-affecting means comprises an adjustable (e.g., repositionable) gravity section (e.g., a pivotably-mounted gravity flow path) which is moved (raised) from an inclined, discharging attitude to a less inclined (e.g., horizontal), nondischarging attitude and back (lowered), by a power- driven conveyor which passes beneath the gravity section in a discharge-receiving relationship. The shifting is caused by the engagement of a conveying element (e.g., a bucket) or other component of the power-driven section with the nonpower-driven section or an attachment thereto, and the result is an interruption of the flow of material whenever no one of the conveying elements is in a proper position to receive same.

(1) Note. The structures of this subclass frequently include additional means to affect the volume of flow, usually by controlling its duration.

SEE OR SEARCH THIS CLASS, SUBCLASS:

533, for a flow-affecting means under this heading wherein a power- driven section may intermittently contact a gravity section, but wherein the purpose is to encourage flow on or in that section rather than to cause the flow to begin or cease as in this subclass.

529 This subclass is indented under subclass 525. Apparatus wherein the flow-affecting means comprises structure whereby an element of a power-driven section is so engaged and/or moved (e.g., opened, tilted, etc.) as to initiate removal of the section's load.

(1) Note. In the case of a power-driven section of the bucket type, which type of section appears frequently in this subclass, the structure usually is of one or the other of two kinds; (1) the bucket is movably mounted with respect to its carrier and a member is provided to cause movement of the bucket (or a guiding/ restraining member is terminated to permit movement of the bucket by gravity), relative to the carrier, into a dumping attitude, or (2) one or more portions of the bucket are movable with respect to the remainder thereof to throw open the load-confining region of the bucket. On the other hand, the mere passage of a bucket around a sprocket into an inverted, load-discharging attitude is not sufficient for this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

525, for flow-affecting means under this heading which may involve a means to effect the removal of a load from a conveying element of a power-driven section, but which removal-affecting means does not manipulate the conveying element.

530 This subclass is indented under subclass 525. Apparatus wherein the flow-affecting means comprises an adjustably-mounted element which can be moved into or out of position in which it blocks the flow path of a conveyor section.

SEE OR SEARCH THIS CLASS, SUBCLASS:

534, for a flow-affecting means under this heading comprising structure which interferes with, or otherwise restricts, but does not close off the flow path.

535, for a flow-affecting means under this heading involving a gravity conveyor section which has means to reposition it, and wherein the flow of material over or through the section may be slowed or stopped by such repositioning.

531 This subclass is indented under subclass 530. Apparatus wherein the element is associated with a gravity conveyor section and is shifted from one position to the other as the result of the movement of a conveying element of a power-driven section into a position to receive the flow which results from the shifting of the element. The element may be shifted by direct contact with the conveying element or some other portion of the power-driven section, or the shifting of the element and the movement of the conveying element may be coordinated otherwise (e.g., geared drive, etc.).

SEE OR SEARCH THIS CLASS, SUBCLASS:

526, for a conveyor system under this heading having a moving flow-control means which is coordinated with a power-driven section, and which means may be in the nature of a traveling gate (e.g., an apertured endless apron, an apertured rotary disc, etc.).

703+, for a conveyor section of the bucket type wherein means is provided to facilitate the loading or the unloading of a bucket.

532 This subclass is indented under subclass 530. Apparatus wherein the element is located adjacent the discharge opening of a gravity discharge material holder. While such an opening often is located in a horizontal plane, and therefore has a vertical discharge path, the opening can be any one from which the discharge path is at least as nearly vertical as it is horizontal.

(1) Note. The element may be located in a spout (i.e., a gravity flow path) which is attached to the holder and depends from the discharge opening thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:

531, for a gate under this heading which may be of the type found in this subclass (532), but wherein its operation is coordinated with that of a power-driven section.

533 This subclass is indented under subclass 525. Apparatus wherein the flow-affecting means comprises a device, mechanism, element, etc., to impart additional energy to the load for the purpose of assisting its movement through the system.

(1) Note. The device, etc., may be located within a section and in direct contact with the load therein (e.g., to prevent "bridging"), or it may act upon a section exteriorly thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:

537, for a conveyor system under this heading which includes means to handle a portion of the load which becomes separated from the main flow path, which means may involve an auxiliary flow path having a device, etc., for agitating, etc.

752+, for a power-driven conveyor section which moves in a vibrator manner, but wherein that movement constitutes the principal conveying force upon the load.

534 This subclass is indented under subclass 525. Apparatus wherein the flow-affecting means comprises structure which is clearly intended to interfere with, or otherwise restrict, but not to close off the movement of a load, or a portion thereof, along or within a flow path.

(1) Note. In the instance of an article-type load, yieldable (elastic, pivotable, etc.) elements frequently are utilized to slow or to even the flow, whereas, in the case of bulk material, the restricting structure often is of a kind which levels, or otherwise configures the cross-section of a moving load.

SEE OR SEARCH THIS CLASS, SUBCLASS:

525, for related structure, but wherein the effect thereof upon the movement of a load is not expressly related to retarding its velocity or reducing its volume.

530+, for related structure, but which has the capability of, and is intended to be used at some time for, closing off the flow path.

535 This subclass is indented under subclass 525. Apparatus wherein the flow-affecting means comprises the adjustable (e.g., movable, repositionable, etc.) mounting of one or more of the conveyor sections for the purpose of altering the flow of material in such respects as direction, velocity (e.g., varying the inclination of a gravity flow path), etc.

(1) Note. This subclass includes a gravity system wherein the first section of the system is adjustable for the purpose of receiving, at alternative locations, material from a source outside of the claimed system.

(2) Note. The adjustability requirement of this subclass is satisfied by a section which is adjustable only in part.

SEE OR SEARCH THIS CLASS, SUBCLASS:

360+, for a conveyor arrangement for selecting among plural sources or plural destinations and wherein the selecting means comprises a movable mounted gravity section.

526, for a flow-affecting means under this heading which frequently includes traveling deflector elements which may, in themselves, perform in the nature of momentary gravity flow paths, but wherein no attempt is made, for purposes of classification, to account for the presence of such a function.

528, for a flow-affecting means under this heading which includes an adjustable gravity section.

533, for a flow-affecting means under this heading which comprises an agitator, etc., and wherein a conveyor section may be adjustable to the extent necessary to cooperate with the agitator.

538, for a conveyor system under this heading wherein one or more of the conveyor sections is repositionable for a nonoperative purpose (e.g., storage, transport, etc.).

586+, for a conveyor system which comprises plural power-drive conveyor sections and wherein the sections are relatively adjustable.

SEE OR SEARCH CLASS:

222, Dispensing, subclass 166, for a dispenser having a supply container which is tiltable for the purpose of dispensing by gravity.

536 This subclass is indented under subclass 535. Apparatus wherein the adjustable section, or at least one of them, if plural, is the last section of the system.

(1) Note. The purpose of the adjustment ordinarily is to change the locus of the point at which work is discharged from the system, and the adjustment frequently comprises pivotablity in one or more planes.

537 This subclass is indented under subclass 523. Apparatus wherein the system includes means pertaining to the handling of a portion or component of the load which becomes separated from the flow path of the principal portion of the load.

(1) Note. The portion which becomes separated may be, for example, bulk material which inadvertently escapes from the principal flow path by overflow, spillage, etc., or it may be foreign material on articles (e.g., the husk on an ear of corn) which is encouraged to leave the main flow path. In the first instance, the means usually involves structure whereby the separated portion is returned to the flow path of the principal portion, whereas in the second case, the means may take the form of an exit path from the system.

(2) Note. The separated portion also may comprise a portion which is shunted to an auxiliary path for return to the main supply and eventual recirculation.

(3) Note. While the means of this subclass may itself comprise an additional conveyor system or an element thereof, it is not intended that a patent of this subclass be additionally classified elsewhere on the basis of that system or element thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:

494+, for a conveyor section having a means to clean it. In some instances, a separate flow path is provided for the material removed by the cleaning means, which material may be residue from the conveyed load.

580, for a conveyor system involving plural power-driven conveyor sections, and wherein a portion of the load is recycled in a closed path.

538 This subclass is indented under subclass 523. Apparatus wherein the system includes means whereby one or more of the conveyor sections are adjustable (e.g., repositionable) relative to

one another for a reason having to do with a nonoperative mode of the system (e.g., for placing the system in a condition for being stored or being moved to another location, for moving a component to a nontraffic-obstructing position, etc.); in general, this subclass involves structure whereby the system may be made more compact.

SEE OR SEARCH THIS CLASS, SUBCLASS:

528, and 535+, for other conveyor systems under this heading having sections which are adjustable, but wherein the adjusting is for the purpose of affecting the flow of material in the system.

586+, for a conveyor system which comprises plural power-drive sections and wherein the sections are relatively adjustable.

632, for a conveyor section which is foldable to facilitate storage or transportation.

861.1+, for a conveyor section having a frame which is adjustable.

539 This subclass is indented under subclass 523. Apparatus wherein the system includes a member which serves to support the load as it moves, under the influence of a previously-acquired momentum, from one conveyor section to another.

(1) Note. The member may take the form of a horizontal planar surface; however, a platform which serves only as depository for the load after it has departed from the system is not subject matter for this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

600, for a conveyor system having plural power-driven conveyor sections and involving load-supporting structure which functions in a similar manner.

540 This subclass is indented under subclass 523. Apparatus wherein the system comprises a gravity discharge material holder, which serves as a source of supply for the system, and a power-driven section downstream thereof. Additional conveyor sections, either gravity or power-driven, may be present downstream of the holder, either in one of the sequences specifically provided for in the subclasses indented hereunder, or in some other sequence.

(1) Note. Some systems which have a source of supply present a close case as to whether the source constitutes a "gravity discharge material holder" for this and the indented subclasses, or a "bin with a power-driven conveyor for discharging it" for subclasses 550.01+ below (see the explanatory material which appears in subclass 523).

If the material leaves the source in a vertically (or predominantly so) downward path solely by gravity, these subclasses (540+) are involved. If the material is moved from the source only by the operation of the power-driven section, subclasses 550.01+ are proper.

If the source is claimed as "overlying the conveyor", or the conveyor is claimed as being "below the source" - despite the absence of a showing of such a separation - gravity flow is presumed to exist.

The disclosure may be helpful in resolving borderline situations; for instance, a statement to the effect that "the material drops onto the power-driven section" is presumptive of the existence of gravity flow. If the situation remains doubtful, then the doubt should be resolved in favor of the existence of gravity flow for this and the indented subclasses.

541 This subclass is indented under subclass 540. Apparatus wherein the system includes at least one more gravity section between the gravity discharge material holder and the discharge-receiving, power-driven section.

542 This subclass is indented under subclass 541. Apparatus wherein the system includes at least one additional power-driven section immediately following the discharge-receiving, power-driven section.

543 This subclass is indented under subclass 540. Apparatus wherein the system includes at least one more power-driven section immediately

following the discharge-receiving, power-driven section.

544 This subclass is indented under subclass 543. Apparatus wherein the successive power-driven section is a conveyor of the apron type.

545 This subclass is indented under subclass 543. Apparatus wherein the successive power-driven section is a conveyor of the screw type.

546 This subclass is indented under subclass 540. Apparatus wherein the system includes at least one gravity section immediately following the discharge-receiving, power-driven section.

547 This subclass is indented under subclass 540. Apparatus wherein the discharge-receiving, power-driven section is a conveyor of the apron type.

548 This subclass is indented under subclass 540. Apparatus wherein the discharge-receiving, power-driven section is a conveyor of the screw type.

549 This subclass is indented under subclass 540. Apparatus wherein the discharge-receiving, power-driven section is a conveyor of the endless belt type.

550.01 Bin having a power-driven conveyor section for discharging or feeding discharge to a gravity or power-driven section:
This subclass is indented under subclass 523. Apparatus wherein the system comprises a receptacle (e.g., bin, tank, etc.) with a power-driven conveyor section for discharging it, which receptacle serves as a source of supply for the system, or the power-driven discharge feeds the discharge to additional conveyor section either of the power-driven or gravity type.

(1) Note. This and the indented subclasses provide for a specific use of the type of conveyor section designated as “a bin with a power-driven conveyor section for discharging it”, as discussed more fully in subclasses 523 and 540 above. These subclasses (550.01+) are the only areas within this heading wherein a receptacle and conveyor arrangement of this nature is accorded, for purposes of classification, any status other than that of its power-driven section, per se.

(2) Note. An elevating conveyor, having at its lower end structure, forming a “boot” from which the conveyor picks up material, usually is an example of a bin with a power-driven conveyor for discharging it. However, such is not the case in the event that structure of the boot is claimed in such a manner (e.g., “a forwardly and downwardly sloping rear wall leading to the path of the buckets”, etc.) that its function as a gravity flow path cannot be ignored; in this situation, the two devices present a system comprised of a nonpower-driven conveyor section (gravity flow path) feeding to a power- driven section.

SEE OR SEARCH THIS CLASS, SUBCLASS:

453, for a conveying system for queueing items from a quantity source onto another conveyor of the system through a throat for restricting the flow of massed items.

550.1 Screw type power-driven discharge means:
This subclass is indented under subclass 550.01. Apparatus wherein the power-driven section for discharging the receptacle is a load engaging rotating section in the form of a helical surface.

550.11 Bucket type power-driven discharge means:
This subclass is indented under subclass 550.01. Apparatus wherein the power-driven section for discharging the receptacle is a holder having a pocket formed thereon to receive the discharge.

550.12 Scraper type power-driven discharge means:
This subclass is indented under subclass 550.01. Apparatus wherein the power-driven section discharging the receptacle is a conveyor having a blade-like member mounted thereon to facilitate movement of the discharge.

550.13 Apron type power-driven discharge means:
This subclass is indented under subclass 550.01. Apparatus wherein the power-driven section discharging the receptacle is a conveyor of the endless belt type.

550.2 Having adjustable bin or discharge means:
This subclass is indented under subclass 550.01. Apparatus the receptacle is movable relative to power-driven discharge means or the power-driven discharge means is movable relative to the receptacle for the purpose of changing the position of one relative to the other.

SEE OR SEARCH THIS CLASS, SUBCLASS:
861.1, for an adjustable conveyor frame or casing.

550.3 Excess material on power-driven discharge means returned to bin:
This subclass is indented under subclass 550.01. Apparatus having means for facilitating the reentry of the discharge carried upon the power-driven discharge means to the source of supply (e.g., receptacle).

550.4 Power-driven discharge means feeds to a subsequent gravity section:
This subclass is indented under subclass 550.01. Apparatus wherein the system includes at least one gravity section which immediately receives the discharge provided by the power-driven receptacle discharge means.

550.5 Power-driven discharge means feeds to a subsequent power-driven section:
This subclass is indented under subclass 550.01. Apparatus wherein the power-driven conveyor section discharge means feeds the discharge to another power-driven conveyor section immediately following said discharge means.

550.6 Of the screw type:
This subclass is indented under subclass 550.5. Apparatus wherein the power-driven section, which immediately receives the discharge provided by the power-driven receptacle discharge means consists of a rotating section having a load engaging portion which is in the form of a helical surface.

550.7 Of the bucket type:
This subclass is indented under subclass 550.5. Apparatus wherein the power-driven section, which immediately receives the discharge provided by the power-driven receptacle discharge means is a holder having a pocket formed thereon for retaining the discharge.

550.8 Of the scraper type:
This subclass is indented under subclass 550.5. Apparatus wherein the power-driven section, which immediately receives the discharge means, is a conveyor having a blade-like member mounted thereon to facilitate movement of the discharge.

550.9 Of the apron type:
This subclass is indented under subclass 550.5. Apparatus wherein the power-driven section, which immediately receives the discharge provided by the power-driven discharge means is an endless belt.

560 This subclass is indented under subclass 523. Apparatus wherein the system comprises three or more conveyor sections, the first three sections of which are, in sequence, power-driven, gravity and power-driven.

SEE OR SEARCH THIS CLASS, SUBCLASS:
554, for a conveyor system under this heading having the same sequence of power-driven and gravity sections, but wherein the first power-driven section is a means for discharging a bin, which bin and power-driven section constitute a source of supply for the system.
561, for a conveyor system under this heading having a gravity section located between two runs of plural-run, power-driven section.
563, for a conveyor system under this heading having gravity and power-driven sections in a sequence which is the reverse of that of this subclass (560).

561 This subclass is indented under subclass 560. Apparatus wherein the system comprises a gravity section which is fed by one run of a plural-run, power- driven section, and which then feeds to another run of that section.

562 This subclass is indented under subclass 523. Apparatus wherein the system comprises a gravity section of the gravity flow path type feeding to a power-driven section.

SEE OR SEARCH THIS CLASS, SUBCLASS:

540, for a conveyor system under this heading having the same sequence of gravity and power-driven sections, but wherein the gravity section is a gravity discharge material holder which is the source of supply for the system.

563 This subclass is indented under subclass 562. Apparatus wherein the system includes another gravity section, which can be either a gravity discharge material holder or a gravity flow path, immediately following the power-driven section.

SEE OR SEARCH THIS CLASS, SUBCLASS:

546, for a conveyor system under this heading having the same sequence of gravity and power-driven sections, but wherein the first gravity section is a gravity discharge material holder which is the source of supply for the system.

564 This subclass is indented under subclass 562. Apparatus wherein the power-driven section is a conveyor of the thrower type.

565 This subclass is indented under subclass 562. Apparatus wherein there are two or more gravity sections upstream of the power-driven section, at least the first of which gravity sections is a gravity flow path.

SEE OR SEARCH THIS CLASS, SUBCLASS:

541, for a conveyor system under this heading having the same sequence of gravity and power-driven sections, but where the first section is a gravity discharge material holder which is the source of supply for the system.

566 This subclass is indented under subclass 562. Apparatus wherein there are two or more power-driven sections downstream of the gravity flow path.

567 This subclass is indented under subclass 566. Apparatus wherein the power-driven sections are arranged serially with respect to one another.

SEE OR SEARCH THIS CLASS, SUBCLASS:

543, for a conveyor system under this heading having the same sequence of gravity and power-driven sections, but wherein the gravity section is a gravity discharge material holder which is the source of supply for the system.

568 This subclass is indented under subclass 523. Apparatus wherein there are two or more power-driven sections upstream of the gravity section.

SEE OR SEARCH THIS CLASS, SUBCLASS:

550.01, for a conveyor system under this heading having the same sequence of gravity and power-driven sections, but wherein the first power-driven section is a means for discharging a bin, which bin and power-driven section constitute a source of supply for the system.

569 This subclass is indented under subclass 523. Apparatus wherein there are two or more gravity sections downstream of the power-driven section.

SEE OR SEARCH THIS CLASS, SUBCLASS:

553, for a conveyor system under this heading having the same sequence of gravity and power-driven sections, but wherein the power-driven section is a means for discharging a bin, which bin and power-driven section constitute a source of supply for the system.

570 This subclass is indented under the class definition. Apparatus including either (a) conveyors on separate conveying paths, or (b) conveyors which transfer a load from one to another.

(1) Note. The following arrangements are not considered systems with plural conveyors: (a) sets of reciprocating members tandemly disposed along the load conveying path, members of adjacent sets being interdigitated, and the load being supported on, and advance by, the sets successively, (b) two or more members which are fixedly secured to a single reciprocating means, such as a pressure actuated ram, and which push articles or bulk material supported on the same surface or on different surfaces, and (c) plural reciprocating means, such as rakes, which positioned in side by side relation, are not rigidly connected together, and are arranged to cooperate in pushing a mass of articles or bulk material supported on a surface without separating means between the articles or bulk material.

(2) Note. Includes here as a system of plural conveyors is an arrangement wherein reciprocating members are driven by a single powered means (e.g., a crankshaft), and are not fixedly connected together if said members push articles or bulk material supported in separated relation on the same surface or on different surfaces (e.g., cans in spaced-apart troughs, or rows of cans supported on the same surface, but separated by a partition).

(3) Note. Not included here as a system of plural conveyors is a first conveyor which is located above a second conveyor and which engages a portion of the load carried by said second conveyor and moves it backward (e.g., a doffing roller situated above an endless belt and rotating in a direction opposite to movement of the latter).

(4) Note. Included in this subclass are systems of conveyors such as endless belts placed side by side, with one belt carrying cans, and another belt carrying can covers, to workers at a can assembly area.

SEE OR SEARCH THIS CLASS, SUBCLASS:

497, for conveyors having cleaning scrapers which are provided with auxiliary conveyors for transporting removed detritus away from the main conveyor.

620+, for plural conveyors which coact by gripping a load therebetween, and which do not transfer the load from one to another.

793+, for pallets, carriages, or the like, which move around an endless path to convey loads supported thereon, plural drive means being spaced along said path for moving said load-conveying means.

817, for plural endless belts disposed side by side and jointly supporting the same load.

571 This subclass is indented under subclass 570. Apparatus including means for influencing the operation of a conveyor in response to (a) a change in operation of the conveying system, (b) presence or absence of the load at a point on its normal path of travel, or (c) a characteristic of the load.

572 This subclass is indented under subclass 571. Apparatus wherein the operation influencing means responds to things recited in either section (b) or section (c) of said subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

505, for a system of plural conveyors in which the operation of a conveyor is controlled by means responsive to the weight of the load.

SEE OR SEARCH CLASS:

53, Package Making, subclasses 52+, for package making apparatus having operation control means responsive to a condition of a package or its contents.

573 This subclass is indented under subclass 572. Apparatus wherein the operation influencing means responds to an undesirable accumulation of load at a point on its travel path.

574 This subclass is indented under subclass 570. Apparatus wherein a first conveyor is mounted on and moves with a second conveyor that engages the same or a different load.

(1) Note. Conveying sections merely supported on movable or repositionable mounts will not be found herein, unless such a mount is an identifiable conveying section which engages a load.

575 This subclass is indented under subclass 570. Apparatus including means for influencing the operating mode of one conveyor with respect to the operating mode(s) of one or more additional conveyors for the purpose of establishing or modifying a particular relationship between the operating modes of the several conveying sections.

576 This subclass is indented under subclass 570. Apparatus wherein conveyors that sequentially carry the same load are synchronized in operation.

(1) Note. Examples of plural conveyors included here are endless belts having load-supporting platforms spaced therealong and revolving in timed relation so that a platform on one belt is positioned to receive a load dropped from a platform on the other belt as the latter passes around an end support roller, or an endless belt that is mechanically linked with the drive of a reciprocating conveyor so that the belt moves only when the reciprocating conveyor is moving in the direction that advances load to said belt.

577 This subclass is indented under subclass 570. Apparatus including means for changing the speed of, stopping, or reversing the movement of a conveyor.

578 This subclass is indented under subclass 570. Apparatus including means for cyclically swinging a pivotally mounted conveyor of the conveying system.

SEE OR SEARCH THIS CLASS, SUBCLASS:

631.1+, for a single conveyor that repetitively swings back and forth.

579 This subclass is indented under subclass 570. Apparatus wherein one of the conveyors moves the load faster than another.

580 This subclass is indented under subclass 570. Apparatus wherein at least a portion of the load is conveyed in a loop-like path.

SEE OR SEARCH THIS CLASS, SUBCLASS:

560, for a conveyor system involving a gravity conveyor section having means to handle a portion of the load which becomes separated from the main flow path, and wherein the separated portion may comprise a portion which is shunted to an auxiliary path for return to the main supply and eventual recirculation.

581 This subclass is indented under subclass 570. Apparatus including a conveyor, the support frame of which comprises hinged sections that can be swung together to provide a compact configuration of said conveyor for storage or transport.

SEE OR SEARCH THIS CLASS, SUBCLASS:

632+, for a single conveyor section having means whereby it may be folded intermediate its ends.

582 This subclass is indented under subclass 570. Apparatus provided with a receptacle for storing load to be conveyed by the system.

SEE OR SEARCH THIS CLASS, SUBCLASS:

550.01+, for conveying systems having a bin feeding a power-driven section.

583 This subclass is indented under subclass 570. Apparatus having means which facilitates adding a conveyor to, or removing a conveyor from, the system.

584 This subclass is indented under subclass 583. Apparatus wherein a conveyor can be added to the system so that it is movable relative to another conveyor of said system.

585 This subclass is indented under subclass 570. Apparatus including an endless belt, the upper conveying reach of which has its travel direction twice reversed to form an S-shaped path therein, and a conveyor receiving a load dropped from said belt when the latter reverses its travel direction at the uppermost loop of said S-shaped path.

SEE OR SEARCH THIS CLASS, SUBCLASS:

812, for a tripper movable along and endless belt conveyor to vary the conveying length of the latter.

586 This subclass is indented under subclass 570. Apparatus wherein one conveyor of the system is repositionable relative to another by moving either the entire conveyor or only a portion thereof.

(1) Note. Included here is a system having means for moving the support frame of a first conveyor so that said first conveyor lifts a load from a second conveyor, said first conveyor then being operated to convey said load. A specific example is a swingable frame that carries an endless belt, said frame being moved upward relative to power-driven rollers so that the endless belt lifts a load from said rollers, and said endless belt then moving said load by its orbital motion.

(2) Note. If coacting conveyors which grip a load therebetween are classifiable as plural conveyors (either because a load is transferred between the coacting conveyors, or because a load is transferred between such conveyors and another conveyor not coacting therewith), a claimed arrangement for moving one of the coacting conveyors relative to another is classifiable in this subclass or an indent thereof.

587 This subclass is indented under subclass 586. Apparatus wherein a conveyor is mounted for pivotal movement about an axis generally perpendicular to the ground.

(1) Note. Included here is a vibratory conveyor including two platforms which swing relative to each other and which are connected by moving drive links or gears for transmitting the motion of one platform to the other. The subclass also includes a vibratory conveyor having (a) two platforms which are connected together for relative swinging motion by a pin fixed on one platform and extending into an aperture on the other platform, and (b) a third platform which is mounted on one of the swingably connected platforms so that it can be extended or retracted relative thereto while the conveyor is operating. The subclass does not include a vibratory conveyor meeting only the requirement of section (a) of the preceding sentence.

588 This subclass is indented under subclass 587. Apparatus including means for changing the length of the path over which the load is conveyed.

(1) Note. Included here are (a) conveyors movable relative to each other so that one conveyor can discharge the load at different points along the available path of load travel on the other conveyor, and (b) plural conveyors, at least one of which includes means for varying its conveying length (e.g., and endless belt conveyor having a belt storage loop that can be shortened while the length of the belt conveying reach is increased during operation of the conveyor, or an endless belt conveyor provided with means for facilitating the addition or removal of links or panel sections of its loop when the conveyor is not operating).

(2) Note. A vibratory conveyor is included here if it includes two platforms which successively carry the load, and which can be shifted relative to each other, while the conveyor is operating, to thereby change the length of the convey-

ing path. This subclass does not include a vibratory conveyor having two platforms which successively carry the load, and which can only be shifted relative to each other while the conveyor is not operating (e.g., a vibratory trough consisting of two sections that can be fixedly connected together by means of bolts, or the like, with different overlapping of adjacent end portions of said sections). See subclasses 752.1+.

SEE OR SEARCH THIS CLASS, SUBCLASS:
812, for an endless belt conveyor having means for varying its conveying length.

589 This subclass is indented under subclass 587. Apparatus wherein a conveyor is mounted for pivotal movement about an axis generally parallel with the ground.

590 This subclass is indented under subclass 587. Apparatus including side-walls respectively disposed on opposite sides of the conveying path and arranged to move or flex when a conveyor is laterally pivoted relative to an adjacent conveyor.

591 This subclass is indented under subclass 587. Apparatus wherein the swingable conveyor is supported or guided in its movement by an arcuate, static means, such as curved track or curved guide slot cooperating with means mounted on the free end of the support frame of said conveyor.

592 This subclass is indented under subclass 586. Apparatus wherein a conveyor is mounted for pivotal movement about an axis generally parallel with the ground.

593 This subclass is indented under subclass 592. Apparatus wherein the system is provided with a cable, chain, or other flexible means having one end secured to the swingable conveyor, and its other end secured to a winding reel.

594 This subclass is indented under subclass 586. Apparatus including means for changing the length of the path over which the load is conveyed.

(1) Note. Included here are the types of conveying systems described in (1) Note and (2) Note of subclass 588 as includible in that subclass (if laterally swingable).

SEE OR SEARCH THIS CLASS, SUBCLASS:
812, for an endless belt conveyor having means for varying its conveying length.

595 This subclass is indented under subclass 594. Apparatus including a plurality of platforms, each having a concave shape transversely of the conveying path so that opposite side portions of said platforms rise above their central section, said platforms being fitted one within another and being movable relative to each other longitudinally of said conveying path to thereby vary the length thereof.

596 This subclass is indented under subclass 595. Apparatus including gripping blocks mounted in pairs on one of said platforms for releasably engaging opposed friction surfaces on another of said platforms to permit (a) movement of the two platforms as a unit when said gripping blocks engage said friction surfaces, and (b) movement of the two platforms relative to each other when said gripping blocks are disengaged from said friction surfaces.

597 This subclass is indented under subclass 570. Apparatus including a first conveyor for moving a load in a first direction, and a second conveyor for moving said load, while it rests on said first conveyor, in a direction transverse to said first direction.

(1) Note. Included here is the combination of a conveyor and means for shifting a load laterally of said conveyor by magnetic force exerted against said load.

SEE OR SEARCH THIS CLASS, SUBCLASS:
370.07, through 370.09, 370.1, 370.11 through 370.13, for a conveyor arrangement for selecting among plural sources or destinations and involving a power-driven means for moving a load from or to a conveyor section

717+, for conveying means of the pusher type.

598 This subclass is indented under subclass 597. Apparatus wherein said second conveyor has orbital motion, or turns about an axis.

(1) Note. Included here are belts, rollers, swingable arms, or other like means which move a load transversely of a conveyor supporting the same.

599 This subclass is indented under subclass 570. Apparatus wherein a load is moved relative to a conveyor by a nonpowered means, such as a fixed guide rail or a freely revolving endless belt moved only by contact with the load.

600 This subclass is indented under subclass 570. Apparatus including passive support means on which the load moves or sits when it is not on a conveyor (e.g., freely rotating rollers or a side platform positioned between the ends of two driven belts for supporting a load as it moves between the belts).

SEE OR SEARCH THIS CLASS, SUBCLASS:

539, for a conveyor system having a gravity conveyor section and involving load-supporting structure which functions in a similar manner.

601 This subclass is indented under subclass 570. Apparatus wherein the load is fed from one conveying path to plural conveying paths, or vice versa.

602 This subclass is indented under subclass 570. Apparatus including only one travel path for the load.

603 This subclass is indented under subclass 602. Apparatus including a plurality of conveyors disposed one above another and alternately carrying a load in opposite directions as it is elevated or lowered.

604 This subclass is indented under subclass 602. Apparatus including at least two conveyors which cooperate to grip the load therebetween and thereby move it.

SEE OR SEARCH THIS CLASS, SUBCLASS:

606+, for plural endless belts, at least one of which is disposed adjacent idler rollers or other passive means, the load engaging both the belt conveyor and said passive means as it travels therebetween.

620+, for a plurality of conveyors which move a load by engaging it therebetween.

605 This subclass is indented under subclass 604. Apparatus wherein the load is carried on a first conveyor before the latter enters a zone of coaction with a second conveyor, and wherein the load is transferred to said second conveyor and carried thereby after it leaves said zone.

606 This subclass is indented under subclass 602. Apparatus including at least two conveyors, each consisting of, or including as part of its structure, an endless loop.

(1) Note. Examples of plural conveyors included here are (a) endless belts that directly support a load on their upper surfaces, and (b) endless belts, each carrying other elements, such as buckets or platforms, which support the load.

607 This subclass is indented under subclass 606. Apparatus wherein the elevation of the load is changed as it is moved by one of said conveyors.

608 This subclass is indented under subclass 602. Apparatus including at least two conveyors, each comprising a body that spins about an axis passing therethrough.

(1) Note. Included here are (a) rotating wheels, each having a plurality of buckets or platforms mounted on its periphery, (b) rotating disks which carry the load on their upwardly facing planar surfaces, or (c) screws rotating about their longitudinal axes.

(2) Note. Included here as a system with plural conveyors are screws which successively convey a load and which are driven by a single power source, a first

screw being connected to said power source, and a second screw being coupled to said first screw only by gears which transmit driving force therebetween.

(3) Note. This subclass includes power-driven rollers arranged in separate groups clearly recognizable as forming separate portions of a load conveying path (e.g., one line of rollers disposed perpendicular to another line of rollers, or two lines of rollers having another type of conveyor therebetween). But the subclass does not include power-driven rollers arranged in a single line, even where the rollers are rotated by separate drive means. See subclasses 780+.

(4) Note. Included here is a rotatable shaft carrying (a) a helical surface or screw, and (b) one or more radially projecting vanes that impel a load radially away from said shaft after the load has been moved to said vane, or vanes, by said helical surface.

SEE OR SEARCH THIS CLASS, SUBCLASS:

662+, for screw conveyors having plural helical surfaces, particularly subclasses 625+, for coating helical surfaces on parallel axes, and subclass 666, for helical surfaces coupled end to end.

780+, for power-driven rolls arranged in an uninterrupted sequence to form a single unbranched conveying path.

609 This subclass is indented under subclass 602. Apparatus including at least two conveyors, each of which moves to-and-fro with high frequency and low amplitude of motion.

(1) Note. Included here is a vibratory conveying means formed of plural platforms which successively carry the load and which are connected by moving drive links or gears for transmitting to-and-fro motion of one platform to the next. The subclass does not include a vibratory conveying means formed of plural platforms fixedly connected together.

610 This subclass is indented under subclass 602. Apparatus including different kinds of conveyors (e.g., an endless belt and a star wheel).

611 This subclass is indented under subclass 610. Apparatus including a conveyor comprising a body that spins about an axis passing therethrough.

(1) Note. Included here are (a) a rotating wheel having a plurality of buckets or platforms mounted on its periphery, (b) a rotating disk carrying the load on its upwardly facing planar surface, and (c) a screw rotating about its longitudinal axis.

(2) Note. Included in this subclass is a conveyor comprising an endless belt and a roller that supports said belt at a point where it reverses travel direction, the belt or means connected thereto, such as buckets, discharging the load onto the roller while passing around the latter.

612 This subclass is indented under subclass 611. Apparatus wherein said spinning body has mounted on its periphery a distinct means, such as a blade, bucket, spike, or pocket, which positively engages the load to ensure its movement along the conveying path.

(1) Note. Included here is a conveying system comprising (a) a rotating member, such as a disk, having buckets spaced about its periphery, and (b) an endless belt also having buckets spaced apart thereon.

613 This subclass is indented under subclass 612. Apparatus wherein the peripherally mounted means move relative to said spinning body to thereby disengage from the load.

(1) Note. The structures to be found herein include, for example, a conveyor having a screw and retracting fingers mounted for rotation on the same cylindrical body.

614 This subclass is indented under subclass 611. Apparatus including a conveyor that moves to-and-fro with low frequency and high amplitude of motion.

(1) Note. Included here as a reciprocating conveyor is a load-carrying strip, each end of which is attached to a winding reel, said strip being moved in opposite directions between the reels by alternately changing their direction of rotation.

615 This subclass is indented under the class definition. Apparatus (A) adapted to be rearranged to perform different functions, or (B) adapted to be altered so as to operate in a different way or change its function in some way by (1) the steps of disassembling the apparatus in some major portion and then reassembling the apparatus with the same or different portion, (2) the step of disassembling some major portion from the apparatus, or (3) the step of assembling some major portion to the apparatus.

(1) Note. Conversion features are common in this art. A mere preamble in a claim to the effect that a device is convertible or is a conversion attachment is generally not enough for classification under this definition. The conversion feature should be spelled out as by (a) specifically claiming one embodiment of an apparatus having a first function and claiming with second conversion functions, or (b) repeated functional statements in the claim. Where no other suitable classification exists, a broad mention of conversion may be enough for classification under this definition.

(2) Note. The change in the apparatus must be more than merely placing a part in one of a series of adjacent holes, or, in general, making a change which amounts to only an adjustment or minor alteration in the overall functioning of the device.

(3) Note. The change must be more than to change a part between an operative and an inoperative position.

(4) Note. When the conversion consists of the assembly of a part, the claim must recite some element of the combination which has little or no utility when the part is in the combination, but is useful when the part is absent from the combination.

(5) Note. A part which is disassembled and reversed to present a new wearing surface is included under this definition.

617 This subclass is indented under the class definition. Method, , of conveying a load or load portion from one place to another.

(1) Note. Only those patents which contain method claims which are susceptible to being practiced by a plurality of different devices, or which are drawn to functions not provided for above, should be placed herein, either on an original or cross-reference basis. Those patents containing method claims which are limited to the operation of a single above-provided-for apparatus will be found in the appropriate apparatus subclass.

(2) Note. See any appropriate subclass above for a process patent having apparatus or other limitations sufficient to warrant placement therein.

618 This subclass is indented under the class definition. Apparatus wherein an element or an assemblage of elements acts in a unitary fashion to support and cause movement of a load of material along a predetermined path from a source to a destination which lie with a distance between one and the other.

SEE OR SEARCH THIS CLASS, SUBCLASS:

860.1, for conveyor frame or casing structure claiming only that means which supports or encloses only a “conveyor”, “conveyor means”, “elevator conveyor”, etc.

619 This subclass is indented under subclass 618. Apparatus wherein the load is moved, at least in part, as a result of its reaction with a moving electron, ion, or magnetic field and not necessarily to any extent by a power-driven surface means which may act as a support for said load.

620 This subclass is indented under subclass 618. Apparatus having at least two power-driven conveyor sections which cooperate to engage the load between said sections and thereby cause the load to be moved in a given direction.

(1) Note. A conveyor section is considered to be power-driven if it is motivated by any power means including another power-driven conveyor section if the first section has parts which directly contact the second section from which motion is obtained. The load cannot constitute a power transmission means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

570+, for conveyor systems having plural conveyor sections which may cooperate to grip and move a load, but which, in addition thereto, as a conveyor system, begin the movement of the load by one of the sections, and complete the movement of the load by another of the sections.

604, for a system of conveying sections having coacting conveying elements defining a load path therebetween.

625+, for coacting parallel screw conveyors.

635, for plural conveyor sections which engage the load simultaneously, but wherein one of said sections acts to skim off and reverse the direction of the skimmed off portion to that direction which a cooperating conveyor section causes said load to move.

721, for pusher conveyors having a movable surface upon which the load is supported.

817, for plural endless belt conveyors which cooperate to support a load set across them.

819, for trough-shaped carrier belts having edges which may be brought together to enclose a load.

621.1 Reciprocating member:
This subclass is indented under subclass 620. Subject matter wherein one of the power-driven conveyor sections engages the load with a back and forth motion as it cooperates with another power-driven conveyor section.

621.2 Load support member lifted by inclined or vertical supporting fluid actuator (e.g., piston or air bag):
This subclass is indented under subclass 621.1. Subject matter wherein an element directly holding the load is raised from a lower to a higher position by a sloping or perpendicular hydraulic elevating mechanism such as a linearly expandable device moving back and forth under fluid pressure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

774.2, for a similar lifting means used in an alternately-acting load support member.

621.3 Load support member lifted by supporting eccentric cam or rotating crank drive:
This subclass is indented under subclass 621.1. Subject matter wherein an element directly holding the load is raised from a lower to a higher position by a revolving or oscillating mechanical device having its axis of rotation displaced from its center or by a revolving link having an axis of rotation at one end and a pivotal connection to the material holding means adjacent to its opposite end.

SEE OR SEARCH THIS CLASS, SUBCLASS:

774.3, for a similar lifting means used in an alternately-acting load support member.

621.4 Load support member lifted by inclined supporting surface:
This subclass is indented under subclass 621.1. Subject matter wherein an element directly holding the load is raised from a lower to a higher position by a sloped, slanted or pitched holding body.

SEE OR SEARCH THIS CLASS, SUBCLASS:

774.4, for a similar lifting means used in an alternately-acting load support member.

622 This subclass is indented under subclass 620. Apparatus wherein two or more of said power-driven conveyors sections, which simultaneously cooperate to move the load, form a

couple to move the load, but wherein each member of the couple, if acting independently, would tend to move the load in opposite directions.

(1) Note. The driven conveyor member which moves opposite to the direction of motion of the conveyed load contacts a portion of the load being conveyed and strips off or throws back the stripped portion of the load.

SEE OR SEARCH THIS CLASS, SUBCLASS:

635, for static means which scrape or smooth out the surface of the load being conveyed.

688.1, for means which engage a free surface of the load to bias the load to the conveying means for greater friction engagement therewith.

836, for endless conveyors having broadly means independent of the carrier designed to prevent accidental removal of the load from the carrier.

623 This subclass is indented under subclass 620. Apparatus wherein two or more of said power-driven conveyor sections, which simultaneously cooperate to move the load, form a couple whose members move relatively in terms of velocity.

(1) Note. A conveyor couple whose members converge to gradually grip the load between them are not considered to have relative motion in terms of direction. See other appropriate subclasses, such as subclasses 620+.

624 This subclass is indented under subclass 620. Apparatus wherein two or more of said power-driven conveyor sections, which simultaneously cooperate to move the load, form a couple, wherein at least two of the sections forming the couple are adapted to rotate continuously about their own axes, and wherein the load, when being conveyed, is in such a position that it is traversed by a line which extends between the axes of the rotating conveyor section.

625 This subclass is indented under subclass 624. Apparatus wherein the rotating sections each have a load-engaging portion which is in the form of a helical surface.

(1) Note. The sections, more often than not are parallel, and the helical surfaces usually are spaced apart, although intermeshing of the surfaces sometimes is found where the load consists of bulk material.

(2) Note. The helical surfaces may, or may not, be identical insofar as concerns characteristics such as pitch, diameter, hand, or speed or direction of rotation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

663, for plural helical surfaces which act together in forming an underlying support for an article-type load, but wherein no portion of that load extends downwardly into intersecting relationship with a line drawn between the axes of two adjacent helical surfaces.

626.1 Opposed endless belts:

This subclass is indented under subclass 620. Subject matter wherein the load is engaged on opposite sides by oppositely facing endless belts which apply forces normal to the belt faces to the intermediate load.

SEE OR SEARCH THIS CLASS, SUBCLASS:

793+, for plural endless conveyors with individual load supports supporting the same load.

817, for plural endless belts supporting a load on their upper surfaces.

626.2 Load is enclosed by belts:

This subclass is indented under subclass 626.1. Subject matter wherein the load is totally enclosed by the opposed belts, or belts in combination with guides or housing means.

626.3 Having means to adjust one belt relative to the opposed belt:
This subclass is indented under subclass 626.2. Subject matter wherein means permit one of the belts to be moved relative to the opposing belt.

626.4 By biasing means:
This subclass is indented under subclass 626.3. Subject matter wherein the one belt is moved relative to the opposing belt by an urging means.

626.5 Having adjustable belt portion:
This subclass is indented under subclass 626.1. Subject matter wherein means permit movement of a portion of one of the belts relative to the opposing belt.

626.6 By biasing means:
This subclass is indented under subclass 626.5. Subject matter wherein a portion of the one belt is moved relative to the opposing belt by an urging means.

629 This subclass is indented under subclass 618. Apparatus comprising (1) a single driven conveyor means which acts through successive stages to move the load in a plurality of recognized different conveying actions, or (2) a plurality of unlike driven conveying sections which cooperate to act simultaneously to move the load.

SEE OR SEARCH THIS CLASS, SUBCLASS:

570+, for plural conveyor sections which act consecutively to move the load.

620+, for plural conveyors which simultaneously engage the load between them.

817, for plural endless belt conveyors which cooperate to support a load set across them.

630 This subclass is indented under subclass 618. Apparatus comprising flexible sheet or tubular material which is fixed against lateral movement and upon which the load to be conveyed is placed, and having means to cause a ripple, wave or raised portion to be developed on the surface of said material, and to move across said surface so that as said ripple contacts said load the load is caused to move across said surface.

631.1 Conveyor portion only cyclically rotates, shifts, or oscillates for extra-conveying function:
This subclass is indented under subclass 618. Subject matter wherein only a part of the load carrier periodically changes its position or direction by revolving, reciprocating, or swinging for additional load carrying action.

632 This subclass is indented under subclass 618. Apparatus wherein the conveyor section is adapted to be folded or to be angulated between its extremities to facilitate transportation or storage thereof, at which time it has no load conveying capacity.

633 This subclass is indented under subclass 618. Apparatus wherein the conveyor section has either (a) a means associated therewith which in its operative position presents a nonload-supporting means which may be engaged by, or engages, the load as it is moved by said section to stop, slow or cause the load to be manipulated or deflected from the path of movement imparted only by said conveyor section; or (b) a means movable to a position where it will cause the load moved only by the conveyor section to be removed and supported from the influence of said section for the purpose of stopping the motion of the load, and which then may subsequently return the load to the conveyor section for continued conveyance thereby.

(1) Note. This subclass includes those patents claiming a single conveyor section and having a load deflector means which is movable from and to operative position, or is adjustable to various operative positions. When it is clear from the claimed disclosure that the function of the deflector is to increase or decrease the number of streams or to ultimately select the load destination, etc., see subclasses above., e.g., 348+, 418+, 434+. See (3) Note for subclass 434.

(2) Note. This subclass also includes patents having means which may be placed in the path of the conveyed load to check

the load against movement counter to its intended direction.

SEE OR SEARCH THIS CLASS, SUBCLASS:

456+, for a conveyor system having means to laterally shift the load on one or more of the conveying elements of the system.

530+, for gravity conveyors combined with power-driven conveyors and having gate means to stop the movement of the load thereon.

534, for flow-restricting structure in a system comprising a gravity conveyor and a power-driven conveyor, which structure may be a means to change the movement of the load for this or an indented subclass.

599, for a system of plural conveyors combined with a passive member that deflects a load from the travel direction imparted thereto by one of said conveyors.

836, for endless conveyor sections having passive load retainer means associated therewith which simply holds the load against falling from the belt or moving relative to the belt.

634 This subclass is indented under subclass 633. Apparatus wherein the nonconveying means is moved into its operative position to engage the load, independent of movement of the load conveying means, by a means activated either responsive to a sensed condition which may or may not exist, or to an independent or conveyor-controlled timing means.

635 This subclass is indented under subclass 633. Apparatus wherein the nonconveying means engages a portion of the conveyed load to remove said engaged portion from the conveyor; to hold the engaged portion against movement by the conveyor; or to deflect the engaged portion of the load in a direction other than that imparted by the conveyor.

SEE OR SEARCH THIS CLASS, SUBCLASS:

534, for means which engages and retards the movement of a load conveyed by a conveyor system which includes a gravity conveyor section.

637, for passive means which causes the entire load carried by the conveyor to discharge therefrom upon contact with said passive means.

836, for guard means separate from an endless belt conveyor designed to prevent the load from falling off the belt.

953, and in particular subclass 622, for conveyors having associated power-driven means which may contact part of the load conveyed to move that portion of the load conveyed relative to the load not contacted by the driven means.

636 This subclass is indented under subclass 633. Apparatus having a passive means associated with the conveyor and which may be located relative to the conveyor which, when engaged by the conveyed load, or a portion thereof, will cause such load to be moved transversely of the moving conveyor surface.

SEE OR SEARCH THIS CLASS, SUBCLASS:

367, for a conveyor system having a member adapted to be placed athwart the path of movement of a conveyed load to select the source or destination of said load.

836, for endless conveyor means having a load retainer or guide separate from said means designed to maintain the conveyed load on the conveyor means.

637 This subclass is indented under subclass 636. Apparatus wherein said associated means causes said load, or a portion thereof, to move away from the influence of the conveyor section.

638 This subclass is indented under subclass 618. Apparatus which projects material to be conveyed by, first exerting a force on said material to move the same, and then causing said force to be released from said material, whereby said material will be projected and continue to move unsupported, in a trajectory, over a horizontal distance.

SEE OR SEARCH THIS CLASS, SUBCLASS:

564, for a conveyor system having a gravity section and a power-driven section, and wherein the latter section is of the thrower type.

SEE OR SEARCH CLASS:

34, Drying and Gas or Vapor Contact With Solids, subclass 58, for devices subjecting material to centrifugal force when the function disclosed is that of treating the material.

209, Classifying, Separating, and Assorting Solids, subclass 642, for methods and means for projecting material through space associated with means for separately collecting the articles or components of the material which takes different paths.

222, Dispensing, subclasses 251+, for device combined with containers or specifically adapted for use with containers, and comprising means acting in addition to, or against, gravity for either removing material from a container, or which move or tend to cause material to move, to or through a container outlet.

239, Fluid Sprinkling, Spraying, and Diffusing, subclasses 214+, for a fluid distributor comprising a slinger, splasher or deflector rotated relative to the affluent fluid, and subclasses 650+, for devices having means for holding a supply of material other than a fluid or slurry, and means for strewing such material over an extended area on a surface.

241, Solid Material Comminution or Disintegration, subclass 5, subclasses 39+ and subclass 275, for comminutors including means to throw the material.

406, Conveyors: Fluid Current, subclass 71 for a rotary thrower combined with a fluid current conveyor.

414, Material or Article Handling, subclasses 174+ and 193+ for a heating chamber combined with a charging device of the thrower type.

639 This subclass is indented under subclass 638. Apparatus having (1) means to sense a condition surrounding the thrower and means responsive to said sensing means to cause a change in the operating condition of the conveyor, or (2) means to sense a particular condition which may, or may not, exist relative to the conveyor itself, such as speed, overload, motor temperature, etc., and means responsive to said sensing means to act to change the operating condition of the conveyor.

640 This subclass is indented under subclass 638. Apparatus having means positionable in the path of the impelled material to control its path after leaving the influence of the throwing mechanism.

641 This subclass is indented under subclass 638. Apparatus having means actuatable to control the speed or the horizontal or vertical angle of the conveying mechanism so that the horizontal distance or angle of discharge of the conveyed material may be varied.

SEE OR SEARCH THIS CLASS, SUBCLASS:

523+, for conveyors having means to throw a material to be conveyed in combination with gravity conveyor means which support said material before and/or after it has been thrown.

642 This subclass is indented under subclass 638. Apparatus having means which revolves about an axis, and in doing so, projects material to be conveyed so that it will assume a trajectory as a result of it having contacted said revolving means.

SEE OR SEARCH CLASS:

222, Dispensing, subclasses 410+, for dispensers having a rotary discharge assistant.

414, Material or Article Handling, subclass 195 for a heating chamber combined with a charging device of the rotary thrower type.

643 This subclass is indented under subclass 618. Apparatus comprising an endless member (i.e., chainlike, smooth or braided cored-like strand or belt) which is driven over sheaves or pulleys

so that at least a portion of said endless member dips into the fluid to be lifted and lifts said fluid by mere cohesion of said liquid to said member, and means whereby the fluid may be removed from said member at the desired elevation.

(1) Note. These devices are sometimes called "pumps", perhaps on the basis that they move a viscous fluid from one elevation to another. However, any development of kinetic energy is not a factor. The function of these devices is merely to move a viscous fluid from one place to another.

(2) Note. The fluid may be removed from the member by passing said member around a pulley.

SEE OR SEARCH CLASS:

415, Rotary Kinetic Fluid Motors or Pumps, subclass 90, for rotary pumps or motors having a bladeless surface wherein transfer of energy between the runner and the fluid which it contacts is the result of friction in the area of contact of said runner and said fluid.

416, Fluid Reaction Surfaces (i.e., Impellers), subclass 4, for rotatable skin friction type fluid engaging impellers or rotors.

417, Pumps, for expansible chamber type pumps.

644 This subclass is indented under subclass 618. Apparatus which is particularly adapted to convey signatures of printers or bookbinders, usually on an inverted V support.

SEE OR SEARCH THIS CLASS, SUBCLASS:

717+, for pusher conveyors which comprise a load-supporting surface over which the load is moved by a power-driven means which engages and moves the load, but does not support the load.

SEE OR SEARCH CLASS:

112, Sewing, subclasses 21+, for book sewing machines having feeding devices for signatures.

227, Elongated-Member-Driving Apparatus, subclasses 99+, for a device for feeding signatures and applying a member, e.g., staple, thereto.

270, Sheet-Material Associating, particularly subclasses 52.01+, for conveyors combined with means to associate or disassociate signatures.

657 This subclass is indented under subclass 618. Apparatus wherein the conveyor section comprises a helical surface formation which is rotated about its longitudinal axis.

(1) Note. Screw conveyors which move articles frequently do so by providing a moving "floor" across which an article is propelled by virtue of resting thereupon (i.e., as in subclass 663), whereas a screw conveyor which moves bulk material functions in the nature of a pusher-type conveyor section.

(2) Note. A screw conveyor which moves bulk material usually is provided with a housing (conduit, trough, etc.) which forms a load support surface; however, the housing is sometimes dispensed with (e.g., a screw conveyor immersed in a bin of material may rely upon the material which surrounds its flow path for the confinement otherwise achieved by the use of a housing).

(3) Note. Usually the helical surface formation includes a core, within which lies the longitudinal axis of the formation, and which core is utilized to transmit a driving force to the conveyor section; however, the so-called "coreless" type of helical surface formation (examples of which appear in subclass 676) is characterized by the absence of a central structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

625, for plural screw type conveyor sections which coact to engage and move a load therebetween.

642, for a thrower type conveyor section of the rotary kind wherein the impelling surfaces may be comprised of helical surfaces or segments thereof.

666+, for connections between housings of successive helical surfaces when those connections correspond with connections between the helical surfaces.

717+, for another kind of conveyor section wherein a load is pushed over a load-supporting surface, but wherein the pushing means is other than a helical surface rotating about its axis.

778, for a spiral type conveyor section wherein the load-supporting surface spiralling defines a path for the load.

SEE OR SEARCH CLASS:

105, Railway Rolling Stock, subclass 48.1, for a railway locomotive having a combustion chamber and a screw conveyor, which conveyor feeds solid fuel to the chamber.

366, Agitating, subclasses 156.1+ for a mixing chamber with a feed means therefor, and wherein a screw conveyor is provided in a feeder or supply reservoir for agitating material therein; and subclasses 318+ for a stationary mixing chamber having a rotatable stirrer of the screw type, and see particularly the subclasses indented thereunder for specific kinds of screw structure.

406, Conveyors: Fluid Current, subclasses 53+ for a screw conveyor combined with a fluid current conveyor.

416, Fluid Reaction Surfaces (i.e., Impellers), subclasses 176+, for a fluid impeller having a working surface in the form of a spiral.

658 This subclass is indented under subclass 657. Apparatus wherein the helical surface formation extends from or is integral with the inner surface of a rotatable tubular member.

(1) Note. Included herein is, for example, a device wherein (a) the helical configuration extends across the diameter of the tubular member, (b) the helical configuration is formed from a plurality of members extending radially inward toward the axis of rotation, and (c) the helical configuration is formed by the inner surface of the hollow tubular member.

659 This subclass is indented under subclass 657. Apparatus wherein the conveyor section structure includes a component, the shape of which is subject to change during the operation of the conveyor, or may be changed to establish a shape whereby said component can be accommodated as an operative part of a conveyor.

660 This subclass is indented under subclass 657. Apparatus wherein the conveyor section comprises one or more helical surface formations, at least one of which can be moved in a direction parallel to its axis of rotation.

(1) Note. Typical of the movement found here is the repositioning of a helical surface with respect to its housing, or of one helical surface with respect to another.

SEE OR SEARCH THIS CLASS, SUBCLASS:

629, for a conveyor section which moves a load by a plurality of different conveying actions (e.g., a helical surface which is rotated and, in addition, reciprocated).

659, for a flexible helical surface which has one portion which is movable relative to another portion (e.g., a helical surface which may be lengthened by stretching it).

661 This subclass is indented under subclass 657. Apparatus wherein the conveyor section comprises one or more helical surface formations and which, by virtue of a changing pitch, diameter (overall or core), number of threads, etc., has a capacity which varies along its length.

662 This subclass is indented under subclass 657. Apparatus wherein there are a plurality of helical surface formations.

663 This subclass is indented under subclass 662. Apparatus wherein the helical surface formations comprise laterally spaced members which form an underlying support for an article-type load, the load continuously contacting at least two of the members.

(1) Note. Movement of the load may be in a direction parallel to the longitudinal axes of the members, or may be diagonally

thereof. In the absence of an axial component of movement, however, consideration should be given as to whether the members do not more nearly comprise one of the types of rolls provided for in subclasses 780+.

(2) Note. Confinement of the movement of the load to the axial direction usually is accomplished by either (a) the provision of an external guide as an abutment for some portion of the load, or (b) the use, in more or less equal number, of oppositely rotating, opposite-handed, helical surfaces.

SEE OR SEARCH THIS CLASS, SUBCLASS:

625, for plural helical surfaces which act together upon a load, and wherein at least a portion of the load is so located as to be intersected by a line drawn between the axes of two of the helical surfaces.

664 This subclass is indented under subclass 662. Apparatus wherein the plural helical surface formations comprise a plurality of coaxial elements, each of which has formed thereon a working surface which extends for less than 360o about the common axis.

(1) Note. The working surface of an individual element may itself be a segment of a helical surface, or it may be planar in nature; in the latter instance, however, the elements are arranged along the axis in such a manner as to form a helical path.

(2) Note. In the instance of those elements which have a working surface which is a segment of a helical surface, the elements may abut one another in such a manner that the individual surfaces form a continuous helical surface.

(3) Note. The structures of this subclass commonly provide means to attach the elements to a member (e.g., a shaft) which extends along the common axis.

SEE OR SEARCH CLASS:

141, Fluent Material Handling, With Receiver or Receiver Coacting Means, subclass 73, for a collection of packing augers wherein blade-like members on a shaft are utilized to move and/or pack fluent material into a receiver.

665 This subclass is indented under subclass 664. Apparatus wherein means is provided to join the elements to the shaft in such a manner that the angular relationship of the elements to the longitudinal axis of the shaft can be reversed for the purpose of changing the direction of thrust of the surfaces.

666 This subclass is indented under subclass 662. Apparatus wherein the plural helical surface formations are coupled one to another in an end to end relationship.

(1) Note. The coupling usually is of a disconnectable or otherwise separable nature, but may comprise a permanent union.

(2) Note. If each surface is formed upon a shaft, it is sufficient that the shafts be coupled end to end, in which event there may be--especially in the instance of an intermediate bearing or an intermediate drive--a brief discontinuity. In turn, it is frequently the practice to utilize one or more short helical surface portions to fill in a discontinuity of this nature.

(3) Note. This and the indented subclasses usually involve also the corresponding connection between any housing members which may be present.

SEE OR SEARCH THIS CLASS, SUBCLASS:

602+, for a conveyor system having plural, power-driven sections arranged in a single flow path.

667 This subclass is indented under subclass 666. Apparatus wherein the coupled formations are driven by way of a member (gear, pulley, sprocket wheel, etc.) which is located between

the formations at, or in the vicinity of, the coupling.

(1) Note. When the surfaces are provided with housing members, a means to seal the spaced, confronting ends of the latter usually is involved.

668 This subclass is indented under subclass 666. Apparatus wherein the coupled formations are pivotably related one to another (e.g., the coupling is a universal joint).

669 This subclass is indented under subclass 662. Apparatus wherein the plural helical surface formations comprise at least one formation of a right-handed thread and at least one formation of a left-handed thread, which formations generate flow paths which either approach, or recede from, each other.

670 This subclass is indented under subclass 657. Apparatus including means coacting with said helical surface formation and/or with the load to regulate or facilitate the passage of the load.

(1) Note. The means includes either a passive structure or a moving surface.

671 This subclass is indented under subclass 657. Apparatus wherein means is provided to facilitate or control either the entry of the load into the housing of a helical surface or the exit of the load therefrom.

SEE OR SEARCH THIS CLASS, SUBCLASS:

670, for a means which may be structurally similar to a means for this subclass (671), but wherein the functioning thereof is influenced by a condition which exists within the housing (e.g., pressure).

672 This subclass is indented under subclass 657. Apparatus provided with means for sustaining the helical surface formation for rotation.

673 This subclass is indented under subclass 672. Apparatus wherein the means to sustain is positioned about the outer periphery of the formation.

674 This subclass is indented under subclass 657. Apparatus provided with means to rotate the helical surface formation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

667, for drive means located between coupled helical surfaces.

675 This subclass is indented under subclass 674. Apparatus wherein the means to rotate may be modified to change the direction or rate of rotation of the formation.

676 This subclass is indented under subclass 657. Apparatus involving structural aspects of a helical surface formation.

(1) Note. This subclass is concerned primarily with those aspects which show most readily in a sectional view taken at 90° to the working portion of the helical surface (e.g., the configuration of the surface, its angular relationship with its axis of rotation, its internal structure, etc.).

677 This subclass is indented under subclass 657. Apparatus wherein means is provided for attaching a helical surface formation to a driving member, which member usually is in the form of a shaft located in the axis of rotation of the formation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

664+, for plural helical surface formations in the nature of a plurality of coaxial elements, which structures commonly provide means for securing the elements thereof to a driving shaft.

678.1 Endless conveyor having means for suspending load:

This subclass is indented under subclass 618. Subject matter wherein the conveying means comprises a hanger from which the load is suspended, said hanger being supported above the location where the load engages the hanger by a support means which is either (1) a track or guide means along which said hanger is caused to move by an endless drive means, or (2) an endless means which both supports and moves said hanger.

SEE OR SEARCH THIS CLASS, SUBCLASS:

463.1+, for conveying systems having at least one article suspending conveyor.

793+, for load holding designs for a unit load conveyor having an endless or rotating path of travel where the load may be suspended also.

SEE OR SEARCH CLASS:

104, Railways, for suspending conveyors having rail supported, power and free, suspending trolleys.

452, Butchering, subclasses 177+ and 187+ for endless hooks limited for use in the butchering art..

679 This subclass is indented under subclass 678.1. Apparatus wherein the conveyed load, or the hanger means supporting the load, is maintained in engagement with the drive means by magnetic means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

690, for conveyors having magnetic means used to enhance the frictional engagement between the conveyor and its load.

680 This subclass is indented under subclass 678. Apparatus having a hanger means which comprises relatively movable parts or is movable relative to the support means, in addition to its conveying motion, and having means to engage and cause movement of said part of said hanger means relative to said support means to cause the suspended load to change position relative to the support means as it is being conveyed, or to cause the load to be disengaged from said hanger or released from the grip of the hanger so that said load may be removed from said hanger.

681 This subclass is indented under subclass 678. Apparatus having a plurality of substantially parallel guide or track support means along each of which an articulated drive means is adapted to move in parallel fashion with respect to the other, and means supported by and spanning the space between said drive means from which a load may be suspended.

SEE OR SEARCH THIS CLASS, SUBCLASS:

817, for endless strip-like belts arranged to move parallel to and spaced from one another, and having load engaging and supporting elements extending transversely of and spanning the gap between the belts.

682 This subclass is indented under subclass 678. Apparatus having a means which is positioned between the hanger means and the load, and which is secured to said hanger means whereby the two said means are maintained in engagement for the purpose of bearing a load.

683 This subclass is indented under subclass 678. Apparatus wherein the articulated drive means transmits the weight of the load from the hanger means to the track or guide support means and said drive means is provided with support engaging means which guide said drive means as it moves along said support means.

684 This subclass is indented under subclass 678. Apparatus wherein motion is transmitted to the hanger means through a sprocket means or other drive means which, in turn, engages and drives the articulated drive means, and including particular means whereby motion is transmitted from said sprocket or other drive means to said articulated means.

685 This subclass is indented under subclass 678.1. Apparatus having means interconnecting or causing engagement between the articulated drive means and the hanger means whereby motion can be transmitted from said drive to said hanger.

686 This subclass is indented under subclass 685. Apparatus wherein said articulated drive means is a strand or cable means and is connected to the hanger means below the point of engagement between the hanger and the support means to transit motion from the drive means to the hanger means.

687 This subclass is indented under subclass 685. Apparatus wherein said articulated drive means is a chain or pivotally interconnected members and is connected to the hanger means below the point of engagement between the hanger and

the support means to transmit motion from the drive means to the hanger means.

687.1 Separable conveyor portion:
This subclass is indented under subclass 678.1. Subject matter wherein the load is supported upon a reusable carrier which engages a load at a point below the location of engagement of the load carrier by its drive means from which it is disengageable.

(1) Note. The drive means may drive the load carrier by either frictional or positive drive means.

688.1 Having means to enhance the friction or adherence between the conveyor and load at random locations on conveyor:
This subclass is indented under subclass 618. Apparatus comprising a conveying means which is provided with means designed to enhance the frictional engagement between the load and the conveying means beyond that which result from the mere weight of the load.

689.1 Suction:
This subclass is indented under subclass 688.1. Apparatus having means to reduce below ambient the air pressure between the load and the power-driven conveying surface means and thereby enhance the frictional engagement between the load and the conveying means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
471.1, for conveyor systems using suction to enhance the frictional contact between the load and the conveyor.

SEE OR SEARCH CLASS:
271, Sheet Feeding or Delivering and 414, Material or Article Handling, appropriate subclass for suction conveyors used to stack or unstack articles.

690.1 Magnetic:
This subclass is indented under subclass 688.1. Apparatus having lines of magnetic flux which cause the load to adhere to the power-driven conveyor.

SEE OR SEARCH THIS CLASS, SUBCLASS:
472.1, for conveyors systems using magnetic forces to enhance frictional contact between the load and the conveyor.

SEE OR SEARCH CLASS:
271, Sheet Feeding or Delivering and 414, Material or Article Handling, appropriate subclass for magnetic conveyors used to stack or unstack articles.

690.2 Transversely extending elongated ridge means formed on or attached by nonmechanical means to the conveyor:
This subclass is indented under subclass 688.1. Apparatus having an elongated laterally extending projection formed on or attached, without using mechanical fastener means, to the conveyor for the purpose of increasing the frictional relationship between the conveyor and the load.

691 This subclass is indented under subclass 688.1. Apparatus wherein the natural slippage between the load and the conveyor means is reduced because of the effect of electrical polarization of the load and the conveying means.

692 This subclass is indented under subclass 688.1. Apparatus wherein the means which causes the conveyed load to adhere to the conveying means is a sharp spike-like member carried by the conveying means on which the load may be stuck or which pierces into the load to convey the load.

SEE OR SEARCH THIS CLASS, SUBCLASS:
620+, for means wherein a load is conveyed between separately moving surfaces, which surfaces may be provided with means to impale the load.
638+, for conveying means which throw a load into a free flight trajectory and which means may impale the load prior to throwing it.
717+, for conveyors comprising a load-supporting surface and a pusher where-in the pushing member may impale the load being pushed thereby.

SEE OR SEARCH CLASS:

19, Textiles: Fiber Preparation, subclasses 67+, for such devices to carry fibrous material to a textile machine.

118, Coating Apparatus, subclass 31, for confection holders, per se, and subclass 502, for impaling-type work holders for use in a coating operation.

221, Article Dispensing, subclasses 213+, for article dispensers not elsewhere provided for using impaling means to engage and carry articles from a source of supply to a point of discharge.

406, Conveyors: Fluid Current, subclass 81 for a fluid current conveyor fed by an endless belt conveyor having load impalers.

693 This subclass is indented under subclass 692. Apparatus employing means other than gravity to remove or to assist in the removal of the load from the impaling means.

697 This subclass is indented under subclass 688.1. Apparatus comprising an endless belt, the outer face of which contacts the load, and a separately formed means hinged to the belt and protruding therefrom in at least one position thereof for the purpose of exerting a positive propelling force on the load (e.g., a belt having mounted thereon a slat or lug swingable between a load-propelling position extending outwardly from the belt face and a retracted position lying flat against the belt face).

698 This subclass is indented under subclass 688.1. Apparatus comprising an endless belt, the outer face of which contacts the load, and a separately formed means secured to and protruding from the belt for the purpose of exerting a positive-propelling force on the load, said means extending substantially across the belt face and a separate screw, pin, rivet, tongue and groove connection, or other mechanical fastening means securing it to said face.

699 This subclass is indented under subclass 698. Apparatus wherein the belt is formed of a flexible, continuous strip of monofilament, composition or laminated sheet material.

(1) Note. Included here is a longitudinally slitted tubular slat that is attached to a conveyor belt by means of (1) a looped portion of said belt which extends through the slit in said slat, and (2) a rod or tube that is positioned within said belt loop to press it firmly against the inner surface of said slat.

699.1 By a plurality of laterally spaced, projecting members to the conveyor:
This subclass is indented under subclass 688.1. Apparatus having a plurality of elements which projects sidewise from one another across the conveyor surface and are formed on or attached without using mechanical fastener means (i.e., glue, etc.) to the conveyor for the purpose of increasing the frictional relationship between the conveyor and the load.

700 This subclass is indented under subclass 618. Apparatus comprising an endless carrier means in the form of a freely suspended loop whereby a carrier-supported load may be raised or lowered.

(1) Note. The loop may or may not be weighted.

701 This subclass is indented under subclass 618. Apparatus wherein the load-engaging and conveying part comprises structure in the form of a bucket which either (1) completely enclosed and moves the load as a unit or in noncommunicating segments, or (2) is substantially cup or trough shaped, or is a variation thereof, and has means to vertically support the load with cooperating sidewall surface means surrounding the load to hold the load against movement in any lateral direction while being conveyed; said part either forms a part of, or is connected to, endless means whereby said load conveying part is moved over an endless path.

SEE OR SEARCH THIS CLASS, SUBCLASS:

509, for bucket conveyors having means specialized to gather a load from a pile of material (e.g., by means whereby the conveyor support may be moved relative to a pile of material so that the bucket may dig into and remove material from the pile, etc.).

715, for conveyors having flexible pocket means in which a load may be placed for conveyance, but which pocket means does not have wall means completely surrounding the load.

793+, for conveyors having surface means to provide vertical support for a unit load. These surfaces may be provided with guard means or other means movable therewith to prevent lateral movement of the load from said surface, but will not have wall means completely surrounding said surface as in subclasses 701+.

819, for trough-shaped endless conveyors which can be made to completely enclose the load, and, in so doing, form a continuous tubular conveyor having no means to compartmentalize the load along the longitudinal axis of the conveyor.

SEE OR SEARCH CLASS:

406, Conveyors: Fluid Current, subclass 81 for a fluid current conveyor fed by an endless conveyor having buckets.

702 This subclass is indented under subclass 701. Apparatus wherein it is particularly intended that the bucket means convey a load in the liquid state.

703 This subclass is indented under subclass 701. Apparatus having particular means whereby the bucket may be loaded or unloaded more readily, including: means adapted to coact with the load in the bucket to assist in the loading or unloading operation; means to give the bucket a particular direction, motion, or path; by particularly designing or constructing the bucket for that purpose; or means controlling the flow of fluid to or from the bucket.

(1) Note. Patents having a mere end sheave over which the bucket passes to thereby invert the same so the load is caused to drop from the bucket are not included herein. However, patents providing sheave means in addition to the end sheave means to cause the bucket to travel a particular path which will facilitate a more complete or particularly directed load discharging or loading operation will be found in this and indented subclasses.

SEE OR SEARCH THIS CLASS, SUBCLASS:

526+, for a conveyor system having a gravity conveyor section and including a moving (e.g., traveling) flow control means which is coordinated with a power-driven section (often of the bucket type) for the purpose of interrupting the flow of material when no one of the conveying elements of the latter section is in a proper position to receive the flow.

702, for bucket conveyors for conveying liquid and having means whereby the liquid may be removed therefrom.

SEE OR SEARCH CLASS:

414, Material or Article Handling, subclasses 334+ for a moving, wheeled, load-transporting type vehicle (e.g., a bucket having track-engaging wheels for supporting it, and attached to an endless element for traction purposes) and a portable loading or unloading device therefor, the device being supported at least in part independently of the vehicle and traveling with the vehicle during the transfer of a load between the two; see especially subclass 336 thereunder for a suspendedly supported device, which is frequently the situation when the vehicle being loaded or unloaded is a car of an aerial tramway.

704 This subclass is indented under subclass 703. Apparatus wherein a portion of the surface of the bucket means which supports or restrains the load may be displaced so that the load may be removed from the bucket.

705 This subclass is indented under subclass 703. Apparatus having means which will engage and cause the load to move relative to the bucket to remove the load from the bucket.

706 This subclass is indented under subclass 703. Apparatus wherein the bucket means is mounted for pivotal movement relative to the endless means, and means is provided whereby

the bucket means may be pivoted to facilitate loading or discharging a load therefrom.

707 This subclass is indented under subclass 701. Apparatus wherein a plurality of bucket means are pivotally interconnected, one to the other, in endless fashion, so that power employed to move one or more of the interconnected bucket means will cause movement in all the other buckets interconnected therewith.

SEE OR SEARCH THIS CLASS, SUBCLASS:

710, for noninterconnected bucket means which are adapted to abut and push one another around an endless track.

708 This subclass is indented under subclass 701. Apparatus having a plurality of bucket means and a means, either incorporated with or separate from the bucket means, moving with the bucket means and providing a covering for the space between the bucket means, as they are spaced for movement, so that material or load will not tend to be lost from the conveyor should it be released to the conveyor in the area between the buckets.

SEE OR SEARCH THIS CLASS, SUBCLASS:

526+, for a conveyor system having a gravity conveyor section and including a moving (e.g., traveling) flow control means which is coordinated with a power-driven section (often of the bucket type) and which means may be in the nature of a “gap closer”.

707, for a plurality of buckets which are pivotally interconnected to form a chain and which may include means covering the space between buckets to prevent the fall of material between the buckets.

709 This subclass is indented under subclass 701. Apparatus having means to vary the tension on the endless means.

710 This subclass is indented under subclass 701. Apparatus having slide and guide or wheel and track means to support the bucket means while it is being driven by the endless drive means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

706, for a slide and guide or wheel and track which is involved in the pivoting of a bucket to facilitate the loading of the bucket or the discharging of a load therefrom.

854+, for other slide and guide or wheel and track means to support other types of movable load-carrying means driven by an endless means.

711 This subclass is indented under subclass 701. Apparatus wherein the endless means is monofilament, composition or woven, band or strand, and particular means is provided whereby the bucket means may be connected to the band or strand and thereby driven to convey the load.

712 This subclass is indented under subclass 701. Apparatus wherein the endless means is a chain or an elongated articulated means formed by pivotally interconnected members, and wherein particular means is provided whereby the bucket means may be connected to the chain means.

713 This subclass is indented under subclass 701. Apparatus wherein the structure or construction of the conveying part of bucket means is particularly defined.

714 This subclass is indented under subclass 713. Apparatus wherein the conveying part comprises a plurality of interconnected, joined, attached, or separate parts.

715 This subclass is indented under subclass 618. Apparatus having a flexible load-support means which, when a load is placed thereon, forms a cradle or sling which supports and restrains the load against movement in one or more, but not all, lateral directions.

716 This subclass is indented under subclass 618. Apparatus comprising a vertically extending conduit means which, at least through said extension, completely surrounds a conveying means comprising an elongated power transmission means and flight means attached thereto and driven thereby, whereby a flowable solid material may be elevated.

(1) Note. Included in this subclass are those patents wherein the conduit is formed by relatively movable members and including conduits formed in part by the elongated power transmission means.

717 This subclass is indented under subclass 618. Apparatus wherein the conveyor section includes surface means which is the sole support for a load or loads against gravity and which does not move to convey the load, said conveyors also including load-propelling means which moves substantially parallel to said surface means and exerts only a force against the load or a portion thereof to move said load said surface means.

(1) Note. Patents solely disclosing pusher-type conveyors, but claiming only flight structure, flight and transmission connection means, flight or flight transmission guide means, or any subcombination of a pusher-type conveyor, not classified elsewhere, which is directly in contact with the load, or deals with load movement, will be found in this or indented subclasses.

(2) Note. See the Notes to subclass 570 for the distinction between plural and single pusher conveyors.

SEE OR SEARCH THIS CLASS, SUBCLASS:

597, for conveying systems having a plurality of conveying sections and a pusher-type shifter associated with one of the sections.

644, for conveyors for moving structures, some of which are the pusher-type.

657+, for screw conveyors wherein a helix pushes a load over a load-supporting surface.

660, for screw conveyors wherein the helix may be shifted axially.

SEE OR SEARCH CLASS:

15, Brushing, Scrubbing, and General Cleaning, subclass 93 and 236.01, for scraping machines and scraping implements.

56, Harvesters, the subclasses including "endless" in their titles, for pushers in that art.

99, Foods and Beverages: Apparatus, subclasses 360 through 366 for a conveyor designed to receive food, a food article or a beverage containing receptacle, and having a heat generator, a heat exchanger, other means physically effecting the food or beverage during the conveying, or an enclosure or tank having more than enough structure for the operation of the conveyor.

144, Woodworking, subclasses 242.1+ for a work feed mechanism on a woodworking machine.

210, Liquid Purification or Separation, subclasses 154+, for flume stream-type strainers which may include like devices for cleaning the strainers.

415, Rotary Kinetic Fluid Motors or Pumps, subclass 5, for like structures utilized in a pump or turbine.

416, Fluid Reaction Surfaces (i.e., Impellers), subclasses 7+, for like structure reacting with an unconfined or undirected medium fluid.

452, Butchering, subclasses 177+ for pushers to push hooks along a track in the butchering art.

718 This subclass is indented under subclass 717. Apparatus having means, separate from the load pushing and support means, which senses or is responsive to the occurrence of a condition or a change in a condition and thus acts to cause a change in the operation of any means whereby the load is caused to move or to not move, or acts to relocate the load-conveying means or its support means.

719 This subclass is indented under subclass 717. Apparatus having means or particular construction designed to prevent damage of the conveyor because of (1) a worn, misaligned, bent, or otherwise abnormal part or parts of the conveyor, or because (2) the load being conveyed has become unmanageable by the conveyor.

720 This subclass is indented under subclass 717. Apparatus having means whereby the load which has been caused to move between given

points by flight means of a given conveyor may be further moved by said flight means so that it will again be moved between the same said points by said flight means or other flight means of said conveyor.

721 This subclass is indented under subclass 717. Apparatus wherein the load-supporting surface is specially designed or is provided with means whereby the coefficient of friction of said surface is indicated as being low.

SEE OR SEARCH THIS CLASS, SUBCLASS:

629, for plural conveying sections which cooperate to simultaneously move a given load, one of said sections being a pusher.

722 This subclass is indented under subclass 717. Apparatus wherein the said member extends from and turns about an axis of rotation in a continuous circular path.

723 This subclass is indented under subclass 722. Apparatus wherein the member moves the load in a circular path on at least a portion of the load-supported surface.

724 This subclass is indented under subclass 723. Apparatus wherein the load is moved along the axis of rotation of said member as well as in said circular path.

725 This subclass is indented under subclass 717. Apparatus wherein said member is a flexible closed-loop force-transmitting assemblage that is driven in an endless path, a portion of said path being parallel to said load-supporting surface along which the member moves a portion of said load.

(1) Note. The assemblage included herein is, for example, a chain, or a belt, or a rope, or a cable.

SEE OR SEARCH CLASS:

406, Conveyors: Fluid Current, subclass 81 for a fluid current conveyor fed by an endless conveyor having load pushers.

726 This subclass is indented under subclass 725. Apparatus provided with at least two said assemblages, each moving in its own path, but a portion of each path being concurrently parallel to said load-supporting surface, whereby, when said paths are parallel to said surface, the members carried by said assemblages cooperate together to move a portion of said load.

727 This subclass is indented under subclass 725. Apparatus wherein the load-supporting surface is a trough having a particular cross-sectional shape and the periphery of the load-engaging surface of the load-engaging means conforms in shape to the cross-sectional shape of the trough.

728 This subclass is indented under subclass 725. Apparatus wherein a load-engaging means is attached to, or is carried by, or is part of said closed-loop assemblage.

729 This subclass is indented under subclass 728. Apparatus provided with means that are shaped to fit a dimension or shape of any part or all of the pusher member, which means is adapted to move or maintain said pusher in its intended path of movement.

(1) Note. Included herein is, for example, an idler wheel, or a sprocket wheel, or a rail, or a track way, having a particular shape to accommodate the pusher, for the purpose of holding the assemblage in its intended path.

730 This subclass is indented under subclass 728. Apparatus wherein the closed-loop assemblage comprises a plurality of connected segments, each segment including: a) a portion thereof that serves as a means for engaging and moving a load, and b) a portion thereof that serves to hold the means in load-moving position, and c) a portion thereof that serves to connect each segment with its preceding and its succeeding segment, and each segment being formed as a single unit.

(1) Note. Each segment may be formed by shaping a single blank, or by permanently assembling a number of pieces into a single unitary assemblage (as by welding, bolting, rewetting, etc.), pro-

vided that each segment can be connected to its preceding and its succeeding segment without the use of additional interconnecting elements.

731 This subclass is indented under subclass 728. Apparatus provided with means for facilitating the attachment of said load-engaging means to said closed-loop assemblage in the detachment of said load-engaging means from said assemblage; provided with means for facilitating the repositioning said member relative to said assemblage.

(1) Note. The integral element found in the patents of subclass 730 is inherently capable of being readily attached and detached from other such segments. Search for the connection of this subclass (731) should include a search through subclass 730, where applicable.

732 This subclass is indented under subclass 728. Apparatus wherein the attachment of said load-engaging means of said assemblage is by way of means permitting arcuate oscillation of the load-engaging means relative to the assemblage.

733 This subclass is indented under subclass 728. Apparatus wherein there is only one closed-loop assemblage which is driven in an endless path, and wherein said load-engaging means is rigidly attached to the said assemblage.

734 This subclass is indented under subclass 725. Apparatus wherein the shape of the load-engaging surface of the means is significant.

735.1 Load support, casing, shield, or auxiliary attachment:
This subclass is indented under subclass 725. Subject matter , wherein the significance is attributed to the load support design, partial or total load enclosing casing design, shield attached to the load support or casing or an auxiliary attachments on the load support or casing of an endless pusher system.

SEE OR SEARCH THIS CLASS, SUBCLASS:
860.1+, for similar concepts in combination with other conveyor systems.

735.2 Modules connectable end to end with no relative movement:
This subclass is indented under subclass 735.1. Subject matter , wherein the load support or casing is formed of plural detachable sections which are attached together in a manner to prevent motion relative to each other after assembly.

SEE OR SEARCH THIS CLASS, SUBCLASS:
860.2, for similar modules and their connection.

735.3 Door, casing, cover, or load supporting surface:
This subclass is indented under subclass 735.1. Subject matter , wherein significance is attributed to a movable or removable closure, enclosing casing, overlying cover or load support design.

SEE OR SEARCH THIS CLASS, SUBCLASS:
860.3, for similar concepts in other conveyors.

735.4 Casing or load supporting floor with door:
This subclass is indented under subclass 735.3. Subject matter wherein the enclosing casing or the load supporting floor has movable or removable closure to permit access to at least one run of the endless pusher.

SEE OR SEARCH THIS CLASS, SUBCLASS:
860.4, for access doors in other conveyors.

735.5 Removable cover overlying the conveyor:
This subclass is indented under subclass 735.3. Subject matter wherein a housing portion which overlies the conveyor and load is capable of being moved therefrom to provide access to said housing portion.

SEE OR SEARCH THIS CLASS, SUBCLASS:
860.5, for removable overlying covers on other conveyors.

735.6 Modules connected end to end permitting relative angular positioning (e.g., due to uneven ground):
This subclass is indented under subclass 735.1. Subject matter wherein the load support or casing is formed of plural detachable sections which are capable of turning movement relative to other sections during conveyor operation.

SEE OR SEARCH THIS CLASS, SUBCLASS:
861.1+, for the same concept in other conveyors.

736 This subclass is indented under subclass 717. Apparatus wherein the member is moved alternately to and fro and wherein said member engages said load to exert a force on and move the load on one of its movements and returns without moving the load to a load-engaging position on the other of its movements.

SEE OR SEARCH CLASS:
406, Conveyors: Fluid Current, subclass 76 for a fluid current conveyor combined with reciprocating pusher-type conveyor.

737 This subclass is indented under subclass 736. Apparatus provided with at least two members arranged transversely of each other and extending along the path of travel of the load, each member moves alternately in a load-moving direction and in a nonload-moving direction, and wherein (1) the load-moving direction is the same for all members, and (2) the entire load-moving motion of two of the members does not extend during the same time interval.

738 This subclass is indented under subclass 736. Apparatus wherein the force-exerting member is held by a movable carriage, which carriage moves the member alternately to and fro.

739 This subclass is indented under subclass 738. Apparatus wherein the movable carriage swings to and fro about a pivot.

740 This subclass is indented under subclass 738. Apparatus wherein the movable carriage moves in a continuous closed-loop path.

741 This subclass is indented under subclass 738. Apparatus wherein there are two or more force exerting members held by the movable carriage.

742 This subclass is indented under subclass 741. Apparatus wherein the members are pivotable about an axis of the carriage.

743 This subclass is indented under subclass 742. Apparatus wherein the members are held by the movable carriage for arcuate oscillation, each member oscillating about its own axis and each axis extending laterally of the path of load travel.

744 This subclass is indented under subclass 743. Apparatus wherein the axis of oscillation of the members are below the load-support surface.

745 This subclass is indented under subclass 742. Apparatus wherein the axes of oscillation of the members are at right angles to the load-support surface.

746 This subclass is indented under subclass 738. Apparatus wherein the force exerting member is mounted on the movable carriage for arcuate oscillation.

747 This subclass is indented under subclass 736. Apparatus wherein the member is moved along a straight line from a starting point during its load-engaging movement and is moved along the same straight line, but in the opposite direction, when returned to its starting point.

748 This subclass is indented under subclass 747. Apparatus wherein the member is moved by a closed-loop device.

(1) Note. Examples of a device for this subclass include (a) endless chain, or (b) endless cable, or (c) endless rope.

749 This subclass is indented under subclass 736. Apparatus wherein the shape of the member is significantly claimed.

750.1 Reciprocating conveying surface:
This subclass is indented under subclass 618. Subject matter wherein a member which is directly supporting the load of material is moving to and fro.

SEE OR SEARCH THIS CLASS, SUBCLASS:
752.1+, for a reciprocating conveyor where the conveyed material moves out of contact with the reciprocating surface during one of the directions of reciprocating movement.

SEE OR SEARCH CLASS:
406, Conveyors: Fluid Current, subclasses 73+ for a fluid current conveyor combined with a reciprocating conveyor.

750.11 Reciprocating gripper:
This subclass is indented under 750.1. Subject matter in which an item holding, seizing, grasping, clamping, or clutching means moves forward and backward alternately during a cycle to pick up, convey, and release the item, then repeat the cycle.

SEE OR SEARCH THIS CLASS, SUBCLASS:
468.2, for reciprocating conveyor moving a specific load as a separate unit with load gripper.

750.12 Suction gripper:
This subclass is indented under 750.11. Subject matter in which the holding, seizing, grasping, clamping, or clutching means is a device that reduces the atmospheric pressure at the item contact point.

SEE OR SEARCH THIS CLASS, SUBCLASS:
468.4, for reciprocating conveyor moving a specific load as a separate unit with load gripper using suction.

750.13 Magnetic or electrostatic gripper:
This subclass is indented under 750.11. Subject matter in which the holding, seizing, grasping, clamping, or clutching means is a device that utilizes (a) the attractive-repulsive nature of certain materials or (b) the phenomenon due to attraction or repulsion of electric charges but not dependent upon their motion.

SEE OR SEARCH THIS CLASS, SUBCLASS:
468.5, for reciprocating conveyor moving a specific load as a separate unit with load gripper using magnetic or electrostatic force.

750.14 Reciprocating surface carries load horizontally and vertically for one cycle only:
This subclass is indented under 750.1. Subject matter in which an article or item alternately forwardly and backwardly moving supporting member transports the article or item in two perpendicular planes during one operation pass.

SEE OR SEARCH THIS CLASS, SUBCLASS:
468.6, for a reciprocating conveyor moving a specific load as a separate unit with a load gripper that moves the load vertically and horizontally.

750.2 Surface formed by plural parallel elongated sections reciprocating horizontally:
This subclass is indented under subclass 750.1. Subject matter wherein the reciprocating conveying surface is comprised of two or more stretched out material holding members extending in the conveying direction and moving to and fro as a group during the material advance and moving to and fro sequentially during holding retraction in order to keep the material stationary.

750.3 Seals:
This subclass is indented under subclass 750.2. Subject matter comprising a gap closing means in or over the joints between the holding members or between the holding members and an adjacent member of the conveying system to prevent undesired entry of debris or fluid into the gap.

750.4 With specified bearing:
This subclass is indented under subclass 750.2. Subject matter wherein a significance is attributed to a material, pattern, or shape of a member supporting the plural elongated sections of the load conveying surface.

750.5 Piston drive:
This subclass is indented under subclass 750.2. Subject matter wherein the horizontal movement of the plural parallel elongated sections is provided by a linearly expandable device moving back and forth under fluid pressure.

750.6 Detachable drive:
This subclass is indented under subclass 750.5. Subject matter wherein the piston drive is releasably engaged between a support framework and the elongated load supporting members so that the load supporting members as a unit are separable from a power transferring mechanism.

750.7 Piston drive:
This subclass is indented under subclass 750.1. Subject matter wherein the reciprocating movement of a single conveyor member is provided by a linearly expandable device moving back and forth under fluid pressure.

750.8 Eccentric cam or rotating crank drive:
This subclass is indented under subclass 750.1. Subject matter wherein the reciprocating movement of the conveying surface of the conveyor is provided by a revolving or oscillating mechanical device having its axis of rotation displaced from its center or by a revolving link having an axis of rotation at one end and a pivotal connection to the load conveyor member adjacent to its opposite end.

751 This subclass is indented under subclass 750.1. Apparatus wherein the conveyor is provided with a detector that generates a signal upon the occurrence of a predetermined condition of the load or the conveyor, which signal causes actuation of a means to regulate the conveyor or movement of the load.

752.1 Vibratory conveying member:
This subclass is indented under subclass 750.1. Subject matter wherein the load carrying surface moves alternately to and fro with a high frequency and a low amplitude so that the material moves out of contact of the carrying surface during a portion of the to and fro movement.

(1) Note. In use, the load is carried on the conveying member during its forward or a portion of its forward movement, and the load continues its forward movement by reason of its inertia and out of contact with the conveying element while the conveyor element reverses its direction to return to its original position for a repeat of the conveyor element movement.

753 This subclass is indented under subclass 752.1. Apparatus wherein the conveyor member is provided with means to change its load-conveying movement to a direction opposite to its former load-conveying movement, which means is operable at the will of an operator.

754 This subclass is indented under subclass 752.1. Apparatus wherein the conveyor member includes a bendable or pliant strip or band to increase or decrease the load-conveying path of the conveyor member.

(1) Note. In use, one end of the flexible belt is fastened to an adjacent end of the vibrating conveyor and the other end of the flexible belt is wound into a reel. Thus, by increasing or decreasing the distance between the conveyor and the reel, the effective length of the conveyor may be varied.

755 This subclass is indented under subclass 752.1. Apparatus provided with means in addition to the conveyor member, which means prevents backward movement of the load during the backing movement of the conveyor member.

756 This subclass is indented under subclass 752.1. Apparatus wherein the conveyor member includes a surface that extends around an axis, as well as along said axis.

757 This subclass is indented under subclass 756. Apparatus wherein the conveyor member surface is secured to the inside wall of a container, said wall being radially spaced from said axis and extending generally parallel to said axis.

(1) Note. The container generally has a bowl shape and is vibrated with an oscillatory motion about the axis so as to effect conveying of the load along the helical path formed by the conveyor member surface.

758 This subclass is indented under subclass 752.1. Device wherein the conveyor is composed of a plurality of channel-shaped conveying parts which are rapidly reciprocated to effect load movement, which parts are provided with means allowing the members to be readily joined or separated.

759 This subclass is indented under subclass 752.1. Apparatus wherein the conveyor member is a load-supporting surface provided with sustaining means to allow controlled vibratory movement of said surface, or provided with means to cause such movement.

760 This subclass is indented under subclass 759. Apparatus wherein the conveyor member is provided with a counter mass or energy-absorbing means to balance or retard destructive or excessive conveyor member motions.

(1) Note. Example of a device of this subclass include (a) another conveyor, or (b) a dash pot, or (c) a shock absorber, or (d) a coil spring.

SEE OR SEARCH THIS CLASS, SUBCLASS:
330, for a damper applied to a vibratory drive means.

761 This subclass is indented under subclass 759. Apparatus wherein the conveyor member is provided with means to regulate the rate of movement of the load.

762 This subclass is indented under subclass 761. Apparatus wherein the rate of movement of the load is regulated by varying the frequency of the to-and-fro movements as caused by the drive means.

763 This subclass is indented under subclass 759. Apparatus wherein the conveyor member is a load-supporting surface provided with sustaining means to allow controlled vibratory movement of said surface.

(1) Note. Included herein, for example, is (a) a coiled spring, or (b) a leaf spring, or (c) rubber or synthetic rubber blocks, or (d) a spring formed of glass fiber, steel or elastomer.

764 This subclass is indented under subclass 763. Apparatus wherein said sustaining means includes a plurality of spaced-apart connecting rods, each rod being hingedly connected at its one end to said load support and being hingedly connected at its other end to a foundation or base.

765 This subclass is indented under subclass 763. Apparatus wherein said sustaining means is at least one rotatable antifriction element located between and touching both of said conveying member and a foundation or base.

(1) Note. Included herein, for example, is (a) a roller, or (b) a ball, or (c) a cylinder, or (d) a wheel, or (e) an endless belt, any of which allows the conveyor member may roll to and fro.

766 This subclass is indented under subclass 763. Apparatus wherein said load-supporting surface is further provided with a vibrating means to cause said controlled vibratory movement.

767 This subclass is indented under subclass 766. Apparatus wherein a balance of energy-absorbing means is operatively connected to the vibratory means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
760, for a damper applied to the conveyor surface or its support.

768 This subclass is indented under subclass 766. Apparatus wherein said vibrating means is powered by a gaseous or liquid medium under pressure.

769 This subclass is indented under subclass 766. Apparatus wherein said vibrating means is powered by mechanism to generate lines of magnetic flux.

770 This subclass is indented under subclass 766. Apparatus wherein the vibrating means includes a rotating mass having a center of rotation and a center of gravity that is not on the center of rotation, said mass being connected to the load-supporting surface.

771 This subclass is indented under subclass 752.1. Apparatus wherein the shape of the load-supporting surface of the conveyor member is significantly claimed.

772 This subclass is indented under subclass 750.1. Apparatus provided with means in addition to, and separate from, the conveyor member, which means prevents backward movement of the load during the backward movement of the conveyor member.

SEE OR SEARCH THIS CLASS, SUBCLASS:

755, for a retrograde movement preventer associated with a vibrator conveyor.

773 This subclass is indented under subclass 750.1. Apparatus wherein the conveyor includes at least two groups of load-carrying bars, each group comprising plural bars connected and acting together, a bar of one group being adjacent to one or more bars of another group, at least one group being movable and another group being either movable or stationary, and the groups coacting in cyclic alternation to lift at least a portion of the load from either group and to advance said load by either of the groups in a wave-like manner.

774.1 This subclass is indented under subclass 773. Longitudinally extending interdigitated sets (lifting by oscillating arms, etc.): Subject matter wherein said load carrying bars reach in the direction of said load and are positioned between or on opposite sides of the bars of another group.

774.2 This subclass is indented under subclass 774.1. Load support members lifted by inclined supporting fluid actuators: Subject matter wherein vertical movement of the load support members is effected by fluid actuating means which directly support the members.

SEE OR SEARCH THIS CLASS, SUBCLASS:

774.1, for fluid actuators which actuate oscillating arms.

774.4, for fluid actuators which move the members along inclined support surfaces.

774.3 Load support members lifted by supporting, eccentric cam or rotating crank drive: This subclass is indented under subclass 774.1. Subject matter wherein the vertical movement of the load-support members is by a rotating or oscillating eccentric member having its axis of revolution displaced from its center or by a rotating (not oscillating) member.

SEE OR SEARCH THIS CLASS, SUBCLASS:

774.1, for an eccentric cam or a rotating crank operating an oscillating arm which supports the member.

774.4 Load support members lifted by inclined supporting surface: This subclass is indented under subclass 774.1. Subject matter wherein vertical movement of the load-support member is by a supporting surface which is sloped, slanted or pitched with respect to a horizontal surface on the member.

775 This subclass is indented under subclass 774.1. Apparatus wherein each group of load-carrying bars has an active motion.

(1) Note. In this subclass one group is movable to lift the load from supporting relationship with another group, and another group is movable to advance the load relative to the one group.

776 This subclass is indented under subclass 775. Apparatus wherein each group of load-carrying bars moves in an orbited endless path, but in opposite phase, one group to the other, whereby alternate groups alternately carry and alternately support the load.

777 This subclass is indented under subclass 773. Apparatus wherein the conveyor includes at least two groups of load-carrying components, each group comprising plural components connected and acting together, each component oscillatable about an axis that is perpendicular to the direction of load advance, and a component of one group being adjacent to a component of another group; and wherein the groups coact to transfer at least a portion of the load from one group to an adjacent component of another group, and from said adjacent compo-

nent of said other group to a component of said one group.

778 This subclass is indented under subclass 618. Apparatus having a load-supporting surface which traverses a spiraling path over which the load will be conveyed.

SEE OR SEARCH THIS CLASS, SUBCLASS:

657, for screw conveyors in which a rotatable helical surface moves the conveyed load.

724, for rotating pusher means which may move the conveyed load over a spiral path.

813+, for an endless conveyor belt having means to maintain or to adjust the tension on said belt.

779 This subclass is indented under subclass 618. Apparatus wherein the conveying element comprises a series of load-contacting rolls attached to an endless driven member. The rolls may be rotated themselves, by power or other means, or braked to prevent rotation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

780, for rolls mounted to be rotated about their own axis to thereby convey a load supported thereby.

804+, for endless conveyors which may be made of rotatable elements which are moved about an endless path.

780 This subclass is indented under subclass 618. Apparatus wherein the conveyor comprises one or more parts or roller means which will rotate about an axis when influenced to do so by a source of power, and thereby cause movement of a load directly supported by and in contact with said rotated part.

(1) Note. Conveyors in this and indented subclasses may include an idler roller which may aid the power-driven roller in supporting the load conveyed. However, see subclasses 523+ for power-driven rollers and nonpower-driven rollers which act independently wherein one is active as a conveyor for the load, while the other is disengaged from the load.

SEE OR SEARCH THIS CLASS, SUBCLASS:

624, for conveyor means wherein the load is moved by being gripped between a plurality of driven rollers.

779, for rolls moved about an endless path and having means to axially rotate a roll or rolls as they move about the endless path.

SEE OR SEARCH CLASS:

19, Textiles: Fiber Preparation, subclass 24, and indented subclasses, for a series of rollers to crush fibers.

72, Metal Deforming, subclasses 199+, for sets of rolls used for metal deforming.

83, Cutting, subclasses having reference in their title to work or product moving, and particularly subclass 156, 235, 259+, 268+, and 436.3.

193, Conveyors, Chutes, Skids, Guides, and Ways, subclasses 35+, for gravity-actuated rollers.

226, Advancing Material of Indeterminate Length, appropriate subclasses, for methods of and apparatus for feeding material without utilizing the leading or trailing ends to effect movement of the material.

384, Bearings, for bearings of general use.

406, Conveyors: Fluid Current, subclass 70 for a fluid current conveyor combined with a line roller conveyor.

492, Roll or Roller, for a roll, per se, not elsewhere provided for, and see the notes thereunder.

781.01 Live roll drive engages, disengages, or slips responsive to load position or blockage:
This subclass is indented under subclass 780. Subject matter having a means to bring a cylindrical motion transmitting device and the load conveying device in contact with each other or out of contact with each other or to permit abnormal movement to take place between the cylindrical motion transmitting device and the load conveying device in response to (a) a sensor detecting the presence or absence of the load at a predetermined position on the conveyor or (b) a device responsive to excessive load on the conveyor.

781.02 Friction drive slips or disengages:
This subclass is indented under subclass 781.01. Subject matter wherein the cylindrical motion transmitting device releases a motion transmitting force to the load conveying rollers via a coupling (e.g., friction clutch) breaking the motion transmitting force relative to one another in response to the overload caused by a desired load stoppage or weight.

781.03 Belt drive:
This subclass is indented under subclass 781.02. Subject matter wherein the frictional motion transmitting device includes a continuous flexible band.

781.04 Friction wheel drive:
This subclass is indented under subclass 781.02. Subject matter wherein the frictional motion transmitting device includes a mechanical device consisting of a circular member having a smooth surface of contact.

781.05 Live roll is driven by load sensor (e.g., trigger roller):
This subclass is indented under subclass 781.01. Subject matter wherein the roll drive means is controlled by a device which detects the load.

781.06 Sensor and drive interconnected by fluid or electric means:
This subclass is indented under subclass 781.05. Subject matter wherein a circuit between the load detecting means and a means to connect or disconnect a motion transmitting device to the roll drive means is powered by liquid, air, gas, or electricity.

781.07 Positive gear drive:
This subclass is indented under subclass 781.05. Subject matter wherein the roll drive motion is transmitted by a meshing toothed wheel without slippage.

781.08 Friction wheel drive:
This subclass is indented under subclass 781.05. Subject matter wherein the motion is transmitted by a mechanical device consisting of a circular member having a smooth surface in direct contact with the roller.

781.09 Flat belt drive:
This subclass is indented under subclass 781.05. Subject matter wherein the motion is transmitted by a continuous band of flexible material having substantially a rectangular cross section.

781.1 O-Ring drive:
This subclass is indented under subclass 781.05. Subject matter wherein the motion is transmitted by a continuous band of flexible material having a round cross section.

781.11 Chain drive:
This subclass is indented under subclass 781.05. Subject matter wherein the motion is transmitted by a continuous band constructed of metal or plastic links.

782 This subclass is indented under subclass 780. Apparatus wherein a load-supporting roller may be shifted in any direction (vertically, laterally, longitudinally) with respect to the load which it conveys.

783 This subclass is indented under subclass 780. Apparatus in which the power means or power transmission means which rotates the roller means is timed, programmed, or is otherwise provided with means whereby said roller means is caused to rotate intermittently or periodically to move the load.

SEE OR SEARCH THIS CLASS, SUBCLASS:

854+, for drive means for conveyors in general, which means are intermittent, indexed, condition responsive controlled, etc.

784 This subclass is indented under subclass 780. Apparatus having means (1) whereby the rotatable speed of a single roller or of a plurality of rollers may be varied, or (2) whereby one roller rotates at a different speed from another roller, or otherwise changes load speed as it moves from one roll to another, and wherein said rollers cooperate to simultaneously support the load being conveyed.

SEE OR SEARCH THIS CLASS, SUBCLASS:

570+, for plural roller conveyors which do not support the load simultaneously and wherein each conveyor may be independently driven or driven at different speeds.

785 This subclass is indented under subclass 780. Apparatus wherein the load being conveyed on the roller means is persuaded to travel along a predetermined longitudinal path on the conveyor because of either the shape of the roller means or the angular relationship of one roller means with another.

786 This subclass is indented under subclass 780. Apparatus wherein the roller means is shaped or arranged to move the load in a direction having at least a component thereof in the direction which is axially of the roller means.

787 This subclass is indented under subclass 780. Apparatus wherein the rolls are constructed or arranged to curve the path of movement given the load conveyed.

788 This subclass is indented under subclass 780. Apparatus having specific motor means by means of which the roller means may be rotated.

789 This subclass is indented under subclass 780. Apparatus having specific means whereby power is transmitted to the roller means so that when activated the rollers will be caused to rotate.

790 This subclass is indented under subclass 789. Apparatus wherein said transmission means is an endless belt or chain which engages the roller means or sprocket means attached to said roller means.

791 This subclass is indented under subclass 789. Apparatus wherein the transmission means comprises gears which engage the roller means.

792 This subclass is indented under subclass 618. Apparatus having a load-conveying means which is driven continuously over a closed path, and having means whereby the velocity of said means, or of a portion of said means, may be caused to change each time it moves through a particular portion, or particular portions, of said path.

SEE OR SEARCH THIS CLASS, SUBCLASS:

334, for a conveyor or accessory, which is specialized to convey people, having a zone of varying speed.

854+, for conveyors having drive means which, when controlled, may stop or start the conveyor on change the speed thereof, but having no significant conveyor structure.

793 This subclass is indented under subclass 618. Apparatus comprising a conveyor having load-supporting surface means moved about an endless or rotating path and comprising a unit load-supporting tray or platform or other surface means which may support a load thereon and power transmission means, said load-supporting surface means being supported by either said flexible means, a track means or other stationary or movable means.

(1) Note. A tray or other load-supporting surface is considered to be the load if in its course of travel it is caused to be disengaged from its propelling means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

597+, for unit load-conveying means moved by endless means arranged in tandem along the path of the conveyor.

678+, for conveyor means from which a load may be suspended wherein said means is supported by a track or guide and is moved by an articulated transmission means.

701+, for bucket conveyors having a surface to vertically support a load and vertical wall means completely surrounding said surface to prevent lateral movement of said load in all directions.

803.16, for conveyors comprising rotating disc members which may be compartmentalized to receive a unit load.

804+, for conveyor means having load-supporting tray means, a plurality of which cooperate to support a single

load or a load comprising a “stream” of granular or the like material.

SEE OR SEARCH CLASS:
414, Material or Article Handling, subclass 248 and 251 for apparatus particularly adapted for charging or discharging a facility for the parking or wheeled vehicles, and wherein there is at least one vehicle transporting device of the kind which comprises an endless carrier having vehicle supporting members attached thereto, which carrier may orbit in a vertical plane.

794 This subclass is indented under subclass 793. Apparatus having means other than cyclic means by which the means driving or moving the supporting surface may be controlled.

795 This subclass is indented under subclass 867.01. Apparatus wherein the load-supporting surface means comprises a plurality of distinct load-supporting surfaces, each being moved, over at least a portion of the endless path, as the result of being pushed by the next following supporting surface.

797 This subclass is indented under subclass 793. Apparatus having means to maintain the plane of the conveying surface means horizontal for load-carrying purposes during at least that portion of its endless path where it is both deviating form straight-line travel and going through a change in altitude.

SEE OR SEARCH CLASS:
414, Material or Article Handling, subclasses 227+, for movable storage carriers for wheeled vehicles, and see section IV-8 in the main class definition to this class for other conveyors used in a dispensing environment.

798 This subclass is indented under subclass 797. Apparatus wherein the load-supporting means is provided with means which is brought into engagement with a movable or stationary guide or stabilizing means located at the point where the load-supporting means is caused to deviate from straight-line motion to constantly maintain the plane of the load- supporting surface means in a constant relationship to the horizontal while in engagement with said guide or stabilizing means.

799 This subclass is indented under subclass 797. Apparatus wherein said load-supporting surface means is propelled and supported solely by a plurality of endless, flexible, motion transmission means of equal length, each said flexible means being trained around associated sheave or sprocket means having nonaligned axes of rotation, so that said load-supporting surface means may be negotiated around said associated sprockets and so that the load-supporting surface may be maintained at a constant angular relationship to the horizontal plane.

800 This subclass is indented under subclass 797. Apparatus wherein the load-support means is provided with means which is in constant engagement with a nonload-supporting, nonpower-transmitting endless flexible means, or with a fixed guide, or track, or rack means to constantly maintain the plane of the load-supporting surface in a constant relationship to the horizontal throughout its course of travel.

801 This subclass is indented under subclass 793. Apparatus in which the load-supporting surface means is secured adjacent one end only to said endless power transmission means, extends laterally therefrom and is unsupported at its opposite end as the load placed on said surface is raised or lowered by movement of said surface.

802 This subclass is indented under subclass 793. Apparatus wherein the load-supporting surface means is provided with means whereby it may move or be moved relative to the path about which is traverses.

803.1 Gripping portions self-open as they pass through a curved path:
This subclass is indented under subclass 803.3. Apparatus wherein the load-supporting component comprises at least two relatively movable portions which move apart as the conveyor travels an outwardly convex path so the load can be inserted or removed.

803.11 Nongripping holder is adjustable for different sized loads:

This subclass is indented under subclass 793. Apparatus wherein the load-supporting component is attached to the rotating or endless drives and do not grip the load and are adaptable or replaceable to accommodate different sized loads.

SEE OR SEARCH THIS CLASS, SUBCLASS:

473.1, for conveyor systems with adjustable or replaceable holders for different sized loads.

803.12 Holder for hollow load contacts interiorly:

This subclass is indented under subclass 793. Apparatus wherein the load-supporting means holds an article having a cavity within itself and the load-supporting means engages the surface of the cavity.

SEE OR SEARCH THIS CLASS, SUBCLASS:

487.1, for laterally projecting pins which engage the interior of a hollow load in a conveyor system.

803.13 Holder formed of nongripping elements which self-open as they pass through a curved path:

This subclass is indented under subclass 793. Apparatus wherein the load-supporting component comprises at least two relatively movable portions which move apart as the conveyor travels an outwardly convex path so the load can be inserted or removed therefrom without being gripped by said relatively movable portions.

SEE OR SEARCH THIS CLASS, SUBCLASS:

484.1, for a conveyor system having nongripping self-opening holders.

803.14 Holder means forms recess to receive or seat load:

This subclass is indented under subclass 793. Apparatus wherein the load-supporting means includes a portion thereof which at least partly surrounds an area or contiguous areas of a load to an extent which prevents unintended movement other than such movement imparted by the load-supporting means.

803.15 Holder means forms an aperture for receiving load:

This subclass is indented under subclass 793. Apparatus wherein the load-supporting means comprised a plate or support having holes therein which could have a smaller circumferential dimension than that of the load to be conveyed, into which the load is insert, but does not fall through the holes because of the difference between said dimensions.

803.16 Rotary conveyor without specific locations for supporting randomly placed articles or bulk material:

This subclass is indented under subclass 618. Apparatus wherein the conveying means is a rotary member which is designed to randomly support articles or bulk material at any location about its periphery.

803.2 Holder supported and driven by horizontally spaced drive:

This subclass is indented under subclass 867.01. Apparatus wherein the separable load support is driven by drives parallel to the vertical which engage the conveyor portions adjacent its opposite ends.

SEE OR SEARCH THIS CLASS, SUBCLASS:

465.3, for separable holders driven by horizontally spaced drives.

803.3 Holder grips load:

This subclass is indented under subclass 793. Apparatus wherein the load-supporting components are mounted on a rotating or endless drive means which positively hold or attract the load by friction or by use of a force field, or by a fluid current.

SEE OR SEARCH THIS CLASS, SUBCLASS:

470.1+, for conveyor systems using load grippers.

803.4 Relatively adjustable grippers space portion of load:

This subclass is indented under subclass 803.3. Apparatus wherein the load-supporting components comprise a plurality of load holding

means which are movable relative to one another to space at least one portion of the load from another portion thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:
468.3, for separable grippers on a reciprocating or oscillating conveyor.

803.5 Suction gripper:
This subclass is indented under subclass 803.3. Apparatus wherein the load-supporting component element means comprises a gaseous medium under subatmospheric pressure to hold the load during conveyance.

SEE OR SEARCH THIS CLASS, SUBCLASS:
471.1, for endless or rotary conveyors in a system using suction grippers.

803.6 Magnetic or electrostatic gripper:
This subclass is indented under subclass 803.3. Apparatus wherein the load-supporting component uses lines of magnetic flux or an electrical force field to hold the load during conveyance.

803.7 Gripper portion biased to load engaging portion:
This subclass is indented under subclass 803.3. Apparatus wherein the load-supporting component comprised at least two relatively movable portions, one of which is continually urged to the load contacting position by a separate resilient means.

(1) Note. The resilient means could be a fluid.

803.8 Gripper portion made of resilient material which is self biased into engaging position:
This subclass is indented under subclass 803.3. Apparatus wherein the load-supporting component is made of resilient material which is compressed or deformed by the reception of the load and is self-urged into engagement with the load.

803.9 Cam means moves at least one portion of the gripper to a load engaging position:
This subclass is indented under subclass 803.3. Apparatus wherein the load-supporting component comprised at least two relatively movable portions, one of which is moved to the load contacting position by a means having a surface carrying fixed points at varying distance from the center thereof.

804 This subclass is indented under subclass 618. Apparatus in which the load-supporting and moving, or carrier, means of the conveyor is a belt movable continuously along the path defined by its longitudinal axis, at least part of said path being that over which a load is to be moved, and the belt having an endless surface or including longitudinally spaced elements which cooperate to form, in effect, an endless surface for supporting the load.

(1) Note. Included here is an endless belt formed for a continuous material, or formed of a series of bars, plates, or other transversely disposed member which either abut one another or are spaced apart longitudinally of the belt and cooperate to support a conveyed load spanning a gap or gaps therebetween.

SEE OR SEARCH THIS CLASS, SUBCLASS:
404, and 405, for an endless conveyor included in load-inverting conveying apparatus.
544, 547, 550.9, and 550.13, for gravity conveyor systems which involve a driven conveyor of the apron type.
606, and 607, for plural endless conveyors forming a conveying system.
610, for an endless conveyor combined in a conveying system with a different type of power-driven conveyor.

SEE OR SEARCH CLASS:
14, Bridges, subclass 70, for an endless conveyor used as a gangway.
29, Metal Working, subclass 2.17, for an endless belt moving work to a cutter.
34, Drying and Gas or Vapor Contact With Solids, subclasses 658+, for belts for conveying webs or strands being treated by a gas or vapor.
38, Textiles: Ironing or Smoothing, subclasses 8+, for a conveyor belt for moving an article in smoothing apparatus.

40, Card, Picture, or Sign Exhibiting, subclass 78.09 and 96+, for a belt used in an exhibiting device.

53, Package Making, subclass 282, for an endless conveyor moving preformed receptacles.

62, Refrigeration, subclass 380, for a continuous belt conveyor in refrigeration apparatus.

65, Glass Manufacturing, subclass 197, for an endless conveyor carrying a glass sheet.

68, Textiles: Fluid Treating Apparatus, subclasses 39+, 44+, and 204, for endless belt carriers in textile treating apparatus.

69, Leather Manufactures, subclass 41, for an endless belt used to support work in leather machines.

83, Cutting, subclasses 155+, for an endless belt or chain for conveying product in a cutting machine.

96, Gas Separation: Apparatus, subclass 42 for an endless belt carrying an electrical precipitator electrode.

100, Presses, subclass 118 and 151+, for an endless conveyor in a press.

110, Furnaces, subclass 40, for endless grates.

118, Coating Apparatus, subclass 239, 322, and 324, for a belt conveyor in a coating apparatus.

134, Cleaning and Liquid Contact With Solids, subclass 48, 67, 70+, and 124+, for a belt conveyor in a cleaning and liquid contact apparatus.

144, Woodworking, subclasses 245.2+ for an endless conveyor in a woodworking machine.

171, Unearthing Plants or Buried Objects, subclass 130, for an endless belt in a machine for removing or separating earth from an object.

182, Fire Escape, Ladder, or Scaffold, subclass 42, for an endless conveyor fire escape apparatus.

185, Motors: Spring, Weight, or Animal Powered, subclass 16, for animal-powered motors employing belts.

204, Chemistry: Electrical and Wave Energy, subclasses 202+, for an endless conveyor in an electrolytic apparatus.

209, Classifying, Separating, and Assorting Solids, subclass 218, 272, 307, 428+, 470, 620, 622+, 661, 663, 665, 685, and 705, for belts for assorters and ore separators.

210, Liquid Purification or Separation, subclasses 400+ and 526, for endless belts in liquid purifiers or separators.

211, Supports: Racks, subclasses 121+, for article-supporting elements mounted on an endless carrier.

221, Article Dispensing, subclass 84, 119, 218, and 253, for an endless belt in an article dispenser.

222, Dispensing, subclass 371 and 415, for an endless belt in a fluent material dispenser.

226, Advancing Material of Indeterminate Length, subclasses 170+, for an endless belt conveyor for a strand or the like.

227, Elongated-Member-Driving Apparatus, subclasses 44+, for an endless conveyor in apparatus within the class.

245, Wire Fabrics and Structure, appropriate subclasses, for wire fabric for use in endless belts.

271, Sheet Feeding or Delivering, subclass 12, 16, 34, 45+, 66-69, 75+, and 150, for endless conveyor in a sheet handling apparatus.

305, Wheel Substitutes for Land Vehicles, subclasses 157+, for nonmetallic endless tracks for land vehicles, and subclasses 185+, for flexible land vehicle tracks formed of interconnected treads.

312, Supports: Cabinet Structure, subclass 91, 97, 134, and 268, for an endless carrier in a cabinet.

406, Conveyor: Fluid Current, subclasses 77+ for endless conveyors combined with fluid current conveyors.

409, Gear Cutting, Milling, or Planing, subclass 263 for an endless carrier for work in a broaching machine.

413, Sheet Metal Container Making, subclasses 56+, for an endless chain for carrying can bodies.

425, Plastic Article or Earthenware Shaping or Treating: Apparatus, appropriate subclasses, for an endless belt used to shape plastic material.

451, Abrading, subclasses 331+ for an endless conveyor for feeding work to an abrading device.

460, Crop Threshing or Separating, subclass 86, for threshing machine belts.

474, Endless Belt Power Transmission Systems or Components, particularly subclasses 202+ for a positive drive belt; and subclasses 237+ for a friction drive belt.

805 This subclass is indented under subclass 804. Apparatus in which the belt is maintained on a selected path, sustained, or caused to move by a magnetic force impressed thereon.

806 This subclass is indented under subclass 804. Apparatus in which deviation of the belt from the centered position on its travel path is corrected by an automatically occurring change in the angular orientation, relative to said path, of revolvable means engaged with a face of said belt.

SEE OR SEARCH THIS CLASS, SUBCLASS:

810.1+, for means which senses a deviation of a carrier belt from its travel path and acts to correct such deviation.

SEE OR SEARCH CLASS:

26, Textiles: Cloth Finishing, subclass 66 and 67, for cloth stretched by rollers which change position to regulate movement of said cloth thereon.

226, Advancing Material of Indeterminate Length, subclasses 21+, for a roller which automatically skews to correct training deviations of a web supported thereon.

474, Endless Belt Power Transmission Systems or Components, particularly subclasses 102+ for a control for correcting belt training deviation in a transmission belt.

807 This subclass is indented under subclass 806. Apparatus including a motor, pressure actuated ram, or other power means for changing the angular orientation of said revolvable means.

808 This subclass is indented under subclass 804. Apparatus wherein said revolvable means maintains the belt, along at least its load conveying reach, in upwardly concave form in the direction perpendicular to travel direction of said belt.

809 This subclass is indented under subclass 804. Apparatus wherein an independent load support is positioned on each side of a belt, the belt, or a position thereof, being movable upwardly or downwardly relative to the supports (e.g., to selectively bring the belt into driving engagement with the load, or to vary the driving force exerted by the belt on the load).

810.01 Condition responsive:
This subclass is indented under subclass 804. Subject matter having means, separate from the belt, which detects an occurrence of a condition and in response thereto acts to start, stop, or correct the movement of the belt in response to (a) the presence or absence of the load or (b) belt damage or (c) misalignment of the belt or its support means or (d) tension in the belt or in a strand supporting the belt.

SEE OR SEARCH THIS CLASS, SUBCLASS:

502.1+, for indicators for measuring dimensions of the article on a conveyor or indicating the current position of the article along the conveyor or the abnormal speed of the conveyor.

810.02 Belt damage sensor:
This subclass is indented under subclass 810.01. Subject matter wherein the detecting means detects a break or wear in the continuous band beyond the pre-established limit.

SEE OR SEARCH THIS CLASS, SUBCLASS:

810.04, for a belt sensor.

810.03 Belt tracking sensor:
This subclass is indented under subclass 810.01. Subject matter wherein the detecting means is adapted to monitor an alignment of the continuous flexible band and actuate an alarm, alignment correction device or stop the continuous band when the continuous band is out of alignment beyond the pre-established limit.

SEE OR SEARCH THIS CLASS, SUBCLASS:
806+, for a belt tracking device.

810.04 Belt tension sensor:
This subclass is indented under subclass 810.01. Subject matter wherein the detecting means is adapted for measuring a force in the continuous band which tends to stretch the continuous band or to measure the amount of slack in the continuous band and having a device which either indicates via an alarm the force in excess of the pre-established limit in the continuous band or control a stretching means to correct the stretch in the continuous band.

SEE OR SEARCH THIS CLASS, SUBCLASS:
813+, for a tensioning device.

811 This subclass is indented under subclass 804. Apparatus wherein positive or negative fluid pressure, relative to atmospheric pressure, is exerted against the belt to either increase or decrease the force exerted by said belt against its support means.

812 This subclass is indented under subclass 804. Apparatus wherein the length of the conveying reach of the belt can be varied.

(1) Note. Included here inter alia are: (1) a conveyor having structure that facilitates addition or removal of its segments to change conveying length, and (2) a conveyor combined with separate means for holding extra segments until they are required to change conveying length (e.g., a reel mounted on a conveyor frame and holding belt segments).

SEE OR SEARCH THIS CLASS, SUBCLASS:
313, for a contractible conveyor mounted on a vehicle.
364, for conveying systems having sections employing load discharging or feeding means which are movable along the length of the section to effect communication between the section and a selected source or destination.
370.01+, for means for loading or unloading a conveyor section at selected locations along the length thereof.

813 This subclass is indented under subclass 804. Apparatus including means for stressing (1) the carrier belt, (2) a drive belt for the carrier belt, (3) a support belt for the carrier belt, or (4) a strand which extends along one side of the carrier belt and which supports, in cooperation with another strand on the opposite side of said carrier belt, a roller or roller assembly supporting said carrier belt.

SEE OR SEARCH CLASS:
19, Textiles: Fiber Preparation, subclasses 250+, for means for tensioning an endless belt used in a machine for attenuating textile fiber.
24, Buckles, Buttons, Clasps, etc., subclass 32, for combined fastening and tightening means for a belt.
26, Textiles: Cloth Finishing, subclasses 54+, for devices for applying tension to cloth.
34, Drying and Gas or Vapor Contact With Solids, subclass 118, for a tightener for a belt associated with a material treating drum.
56, Harvesters, subclass 224, for a drive belt tensioner, and subclass 292, for tensioner for endless cutter.
57, Textiles: Spinning, Twisting, and Twining, subclass 105, for means for automatically tensioning driving bands.
83, Cutting, subclasses 814+, for means for tensioning an endless cutting band or chain.
101, Printing, Digest 21, for means for tensioning webs.
104, Railways, subclass 117, for tension regulators for railway cables.
105, Railway Rolling Stock, subclasses 105+, for belt tighteners for wheel or axle drives.
114, Ships, subclasses 213+, for devices for relieving tension in a cable.
180, Motor Vehicles, subclass 351 and 357, for rear axles of motor vehicles which are movable to adjust a drive chain.

187, Elevator, Industrial Lift Truck, or Stationary Lift for Vehicle, subclass 264 for an elevator car shifted by a rope drive and separate biasing means for maintaining tension in a rope drive.

192, Clutches and Power-Stop Control, subclasses 224+, for belt tighteners which act as clutches combined with brakes.

211, Supports: Racks, subclass 119.09, for clothesline loop tighteners.

242, Winding, Tensioning, or Guiding, subclasses 419+ and 147+ for means to apply or regulate stress in a running material.

254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 199+ for portable implements or apparatus for tensioning flexible material or for extracting stumps or poles.

305, Wheel Substitutes for Land Vehicles, subclasses 120+, 125, 145+, 152, and 153+, for tensioner for vehicle track.

384, Bearings, subclasses 252+ for adjustable support for a bearings.

451, Abrading, subclass 311 for means for maintaining in traveling abrading bands.

474, Endless Belt Power Transmission Systems or Components, particularly subclasses 101+ for a tension adjuster for a power transmission belt.

814 This subclass is indented under subclass 813. Apparatus wherein a spring exerts force on the belt or strand to maintain tension therein.

815 This subclass is indented under subclass 813. Apparatus wherein a weight is arranged to exert force on the belt or strand to maintain tension therein.

816 This subclass is indented under subclass 813. Apparatus including a threaded means that is turnable to vary tension in the belt or strand.

(1) Note. Included here is a screw moved axially by turning a nut on the screw, thereby moving a belt support connected to the screw.

817 This subclass is indented under subclass 804. Apparatus including plural belt reaches arranged in side-by-side relation to jointly support a load.

(1) Note. Included herein inter alia are separate belts which are disposed in side-by-side relation and which are (1) inclined relative to a vertical plane situated between their edges so that the belts together form a trough, or (2) supported at different elevations along their conveying reaches so that one edge of a plate-like load rests on the upper surface of the lower belt and the opposite edge of said load rests against a side surface of the upper belt.

818 This subclass is indented under subclass 804. Apparatus wherein the load-supporting reach of the belt has a concave cross-sectional shape so that the side portions of said carrier belt rise above its central section.

(1) Note. Included herein inter alia is a carrier belt which sags between supports connected to its edges, or is connected to and shaped by transverse frames spaced apart longitudinally thereof, or is flexed into a trough when a separate element mounted thereon engages a cam surface extending along its travel path.

SEE OR SEARCH THIS CLASS, SUBCLASS:

806, for a trough-shaped carrier belt supported on a roller or roller assembly which automatically skews to correct training deviations of said belt.

819 This subclass is indented under subclass 818. Apparatus in which the belt edges are juxtaposed, in the conveying reach of the belt, to thereby completely or substantially enclose the load.

SEE OR SEARCH THIS CLASS, SUBCLASS:

701+, for elongated tubular-type conveyors having means to compartmentalize the tubular load-conveying portion into noncommunicating compartments.

821, for a belt which has raised edges formed thereon, or is otherwise preshaped to sustain a trough configuration in cross section.

820 This subclass is indented under subclass 818. Apparatus in which the belt in intrinsically shaped in the form of a trough.

(1) Note. Included herein is a carrier belt formed of wires or rods.

821 This subclass is indented under subclass 820. Apparatus wherein the belt consists of, or includes as part of its structure, a loop of sheet-like material.

822 This subclass is indented under subclass 820. Apparatus in which the belt is formed of or includes a plurality of plates extending crosswise of said belt and successively disposed lengthwise thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:
850+, for similar belt structure in which the carrier belt is not trough-shaped in cross section.

SEE OR SEARCH CLASS:
59, Chain, Staple, and Horseshoe Making, subclass 91, for chains formed of sheet metal links.

823 This subclass is indented under subclass 818. Apparatus in which the belt is supported in nonplanar cross-sectional form by independent means engaging a face of said belt.

(1) Note. Included herein inter alia is a carrier belt flexed into a trough by a stationary support on which it slides, or by one or more revolving belts on which it is supported.

824 This subclass is indented under subclass 823. Apparatus in which the belt support means comprises at least one roller.

(1) Note. Included herein inter alia is a carrier belt shaped into a trough by a flexible roller sagging between ends supports, or by coaxial rollers having different diameters, or by rollers tilted relative to one another and connected so that they rotate together.

(2) Note. If a roller is claimed for shaping a carrier belt into a trough, the invention is classified herein or in indented subclasses. If a roller is claimed generally, the invention is classified in Class 384, Bearings.

SEE OR SEARCH THIS CLASS, SUBCLASS:
501, for lubricating means for rollers that form a belt into a trough.

825 This subclass is indented under subclass 824. Apparatus wherein the belt support means comprises a plurality of rollers which are independently rotatable, generally disposed in end to end relation crosswise of the carrier belt, and tilted relative to one another.

(1) Note. Included herein inter alia is a carrier belt supported on rollers strung on a flexible strand or rod which sags between a pair of supports.

826 This subclass is indented under subclass 825. Apparatus wherein at least one roller is movable by choice to thereby vary the angle of orientation between a plurality of rollers.

827 This subclass is indented under subclass 825. Apparatus in which supports for the rollers are hinged together in end to end relation to form a concatenation hanging between supports located at opposite sides of the belt.

828 This subclass is indented under subclass 825. Apparatus including at least one strand extending along each of the opposite edges of the belt, and a frame connected to at least one of the strands and supporting at least one of the rollers.

829 This subclass is indented under subclass 825. Apparatus wherein at least one of the rollers is supported at only one of its ends.

SEE OR SEARCH THIS CLASS, SUBCLASS:
826, for a belt-troughing roller assembly including a roller that is supported from one end only.

830 This subclass is indented under subclass 825. Apparatus including at least three upwardly projecting roller supports fixed in traversely spaced relation on a rigid member extending crosswise of the belt.

831 This subclass is indented under subclass 804. Apparatus wherein the belt makes a lateral bend, with the lower belt reach traveling directly under the upper belt reach at said bend.

832 This subclass is indented under subclass 804. Apparatus including claimed means for moving the carrier belt around its orbital path.

SEE OR SEARCH THIS CLASS, SUBCLASS:

805, for a carrier belt driven by magnetic means.

810.1+, for a carrier belt, the movement of which is controlled by condition responsive means.

818+, for drive means associated with trough-shaped carrier belt.

854+, for drive means for conveyors in general.

SEE OR SEARCH CLASS:

40, Card, Picture, or Sign Exhibiting, subclass 32, for an electric motor drive for an endless belt used as a display device.

474, Endless Belt Power Transmission Systems or Components, subclasses 8+ for drive belts.

832.1 Indexed or intermittent drive:
This subclass is indented under subclass 832. Subject matter wherein the drive means causes the conveyor to stop and start at definite intervals.

832.2 Brake means to slow, stop or hold carrier belt:
This subclass is indented under subclass 832. Subject matter wherein means are provided to lower the speed, halt or retard the belt in its movement.

832.3 Brake means directly engages carrier belt:
This subclass is indented under subclass 832.2. Subject matter wherein the brake means physically contacts the carrier belt.

833 This subclass is indented under subclass 832. Apparatus including a drive belt movable along the path defined by its longitudinal axis, said drive belt being free from said carrier belt, but moving the same through (1) abutment between parts of the belts, or (2) clamp means mounted on one of the belts which can be quickly engaged with and released from the other belt.

SEE OR SEARCH CLASS:

210, Liquid Purification or Separation, subclass 401, for belt superimposed on a moving support.

834 This subclass is indented under subclass 832. Apparatus including a drive wheel having radially projecting teeth that engage counterparts on the carrier belt or on a belt attached to the latter.

SEE OR SEARCH THIS CLASS, SUBCLASS:

849, for similar devices where sprocket is not included in claim.

SEE OR SEARCH CLASS:

474, Endless Belt Power Transmission Systems or Components, particularly subclasses 152+ for a positive drive pulley.

835 This subclass is indented under subclass 832. Apparatus including a member rotatable about an axis by drive means and engaged with the carrier belt to impart motion thereto.

SEE OR SEARCH CLASS:

474, Endless Belt Power Transmission Systems or Components, particularly subclasses 166+ for a friction drive pulley.

836.1 Having load retainer or guide separate from carrier belt:
This subclass is indented under subclass 804. Subject matter wherein the load is restrained, directed or contained on the carrier belt by laterally positioned longitudinally extending surfaces or by surfaces positioned in opposition to the carrying surface of the carrier belt.

SEE OR SEARCH THIS CLASS, SUBCLASS:
626.1+, for coacting endless belts.

836.2 Load retainer biases load transversely against carrier belt:
This subclass is indented under subclass 836.1. Subject matter wherein a containing surface is urged toward the carrying surface of the carrier belt to retain the load.

836.3 Laterally adjustable or yieldable guides contact load:
This subclass is indented under subclass 836.1. Subject matter wherein guides are mounted for sidewise movement or urged sidewise relative to the carrier belt to accommodate width of the load.

836.4 Replaceable modular guides for changing the conveying path cross-section:
This subclass is indented under subclass 836.1. Subject matter wherein the guide means are interchangeable, differently dimensioned elements which are selectively used to change any of the cross-sectional dimensions of the conveying path.

837 This subclass is indented under subclass 804. Apparatus including specific means for sustaining the belt, holding it on a selected path, or pressing it against an object.

SEE OR SEARCH THIS CLASS, SUBCLASS:
810.1+, for means which senses a shifting of a carrier belt from its centered position on a support and acts to correct such deviation.
813, for a carrier belt supported on a roller or roller assembly which automatically skews to correct training deviations of said belt.
823, for a carrier belt flexed into a trough by a stationary support over which it slides.
845, for a carrier belt supported or guided by rotatable means attached to the belt.

SEE OR SEARCH CLASS:
19, Textiles: Fiber Preparation, subclass 249, for an auxiliary support for an endless belt used for attenuating textile fiber, and subclasses 252+, for means for guiding an endless belt used for attenuating textile fiber.
34, Drying and Gas or Vapor Contact With Solids, subclasses 640+, for means for guiding or floating a running web or strand by means of a fluid current, and subclasses 647+, for means for guiding such running material in a zigzag path.
84, Music, subclass 161, for guides for sheet music.
451, Abrading, subclass 297 for belt tracking means in an abrading machine.
474, Endless Belt Power Transmission Systems or Components, appropriate subclasses for a guide or tensioning drive for an endless power transmission belt.

838 This subclass is indented under subclass 837. Apparatus wherein rollers on the belt rest on a rail or other support extending longitudinally of said belt.

839 This subclass is indented under subclass 837. Apparatus in which a rotatable member is oriented to turn the belt in screw-like motion about its longitudinal axis, or to turn the belt from one horizontal path to another horizontal path extending in a different direction.

(1) Note. Included here is a means which lifts one edge of a belt upward to discharge a load from the belt.

840 This subclass is indented under subclass 837. Apparatus including a roller, wall, or other means which exerts a force sidewise against the belt to keep the latter from shifting horizontally in a direction transverse to the longitudinal center line of the belt.

841 This subclass is indented under subclass 837. Apparatus wherein the belt slips on an underlying support (e.g., a smooth plate).

SEE OR SEARCH THIS CLASS, SUBCLASS:

836, for a belt support in the form of a slide plate having side walls that retain the conveyed load on the belt.

842 This subclass is indented under subclass 837. Apparatus including a rotatable body abutting the lower face of the belt on the conveying belt reach, or engaging either the upper face or the lower face of the belt on the nonconveying belt reach.

(1) Note. If a roller is claimed for supporting carrier belt, the invention is classified herein or in the indented subclass. If a roller is claimed generally, the invention is classified in Class 384, Bearings.

SEE OR SEARCH THIS CLASS, SUBCLASS:

806, for a roller or roller assembly which automatically skews to correct training deviations of a carrier belt.

824+, for a roller or roller assembly engaged with the lower face of a carrier belt to flex said belt into a trough.

835, for a roller which drives a carrier belt.

836, for a roller which retains a load on a carrier belt.

843 This subclass is indented under subclass 842. Apparatus wherein the rotatable means yieldably supports the belt (e.g., a roller formed of rubber or resiliently mounted, etc.).

844.1 Carrier belt structure:

This subclass is indented under subclass 804. Subject matter wherein significance is attributed to the particular construction of the conveyor belt.

844.2 Connection means joins ends of sheet-like belt:

This subclass is indented under subclass 844.1. Subject matter wherein two ends of a flexible belt segment or two adjacent ends of two flexible segments are joined by some means to form an endless flexible belt.

SEE OR SEARCH CLASS:

24, Buckles, Buttons, Clasps, etc., subclasses 31+,for means for connecting end of a belt.

474, Endless Belt Power Transmission Systems or Components, subclass 218 and 253+, for means for connecting opposite ends to form a loop.

845 This subclass is indented under subclass 844.1. Apparatus in which a turnable means, such as a roller, wheel, drum, or ball, is engageable with means for supporting the belt or maintaining it on a predetermined path.

846 This subclass is indented under subclass 844.1. Apparatus wherein the belt consists of, or includes as part of its structure, a loop of sheet-like material.

SEE OR SEARCH THIS CLASS, SUBCLASS:

692+, for conveyor belt means having load-impaling means projecting from its surface.

SEE OR SEARCH CLASS:

428, Stock Material or Miscellaneous Articles, for a single layer stock material in the form of a web or sheet, especially subclasses 116+, for such material having varying thickness.

474, Endless Belt Power Transmission Systems or Components, particularly subclasses 237+ for a friction drive belt.

847 This subclass is indented under subclass 846. Apparatus including (1) strengthening elements embedded in the material forming the belt, or (2) a belt formed of plural plies of material joined together.

SEE OR SEARCH CLASS:

305, Wheel Substitutes for Land Vehicles, subclasses 167+ and 183, for metal reinforced nonmetallic endless flexible tracks for land vehicles.

428, Stock Material or Miscellaneous Articles, subclasses 55+, for a laminate with filamentary elements (e.g., strands) in one layer disposed at an angle to such elements in a second

layer, and subclass 60, for a laminate having a parallel relationship between filamentary elements of adjacent layers.

474, Endless Belt Power Transmission Systems or Components, particularly subclasses 237+ for a friction drive belt.

848 This subclass is indented under subclass 844.1. Apparatus in which the belt is formed of or includes (1) a wire lattice, or (2) rods having center portions thereof extending transversely of said belt in spaced, parallel relation, the ends of each of said rods extending longitudinally of said belt and turning around an adjacent rod to form a pivotal connection therewith.

SEE OR SEARCH THIS CLASS, SUBCLASS:

820, for a trough-shaped carrier belt including wires or rods.

851+, for a conveyor belt formed of separate tandemly disposed strips having a zigzag shape transversely of the belt and joined together by rods passing through holes in interdigitated crown portions thereof.

SEE OR SEARCH CLASS:

59, Chain, Staple, and Horseshoe Making, subclass 83, for chains formed of wire links.

245, Wire Fabrics and Structure, subclasses 2+, for wire fabrics, per se.

256, Fences, subclass 45, for wire fabric used in fences.

474, Endless Belt Power Transmission Systems or Components, particularly subclasses 202+ for a positive drive belt; and subclasses 237+ for a friction drive belt.

849 This subclass is indented under subclass 848. Apparatus including a link-formed belt that is secured to the load-carrying belt.

850 This subclass is indented under subclass 844.1. Apparatus in which the belt is formed of or includes rigid link members pivotally connected one to another in tandem relation lengthwise of the belt.

(1) Note. Included herein inter alia is a carrier belt formed of links joined by hooks, ball and socket-type connections, or lacing rings or coils extending through apertures in said links.

SEE OR SEARCH THIS CLASS, SUBCLASS:

820+, for a trough-shaped carrier belt including links.

832+, for a device which drives a carrier belt including links.

845+, for a carrier belt including links and rollers.

846+, for a carrier belt including links and a looped strip of flexible material.

849, for a carrier belt including links and wire or rod elements.

SEE OR SEARCH CLASS:

59, Chain, Staple, and Horseshoe Making, subclass 82 and 84+, for chains formed of links.

474, Endless Belt Power Transmission Systems or Components, particularly subclasses 202+ for a positive drive belt; and subclasses 237+ for a friction drive belt.

851 This subclass is indented under subclass 850. Apparatus in which the link members are connected by separately formed pins.

852 This subclass is indented under subclass 851. Apparatus in which the link members pivot about mutually perpendicular axes, so that the carrier belt can curve in both horizontal and vertical planes.

853 This subclass is indented under subclass 851. Apparatus including identical link members, each formed at one end with transversely spaced knuckles, or bifurcated to provide at one end transversely spaced arms, with the opposite end of each link member extending between the knuckles or arms of the longitudinally adjacent link member.

SEE OR SEARCH THIS CLASS, SUBCLASS:

503+, for conveyors which are controlled in response to a unit load count.

860.1 CONVEYOR FRAME OR CASING:
This subclass is indented under the class definition. Apparatus directed to means for supporting or encasing the load carrying means of a conveyor, or to the surface, per se, upon which the load rests as it is conveyed.

860.2 Modules connectable end-to-end with no relative movement:
This subclass is indented under subclass 860.1. Apparatus wherein the conveyor support or casing comprises components or modules which interconnected in end-to-end relationship along the longitudinal axis of the conveyor without relative movement between the modules or components.

SEE OR SEARCH THIS CLASS, SUBCLASS:
735, for endless scraper troughs which are interconnected modules.
861.2, for modules interconnected for relative movement.

860.3 Casing, cover, shield or load supporting surface:
This subclass is indented under subclass 860.1. Apparatus wherein significance is attributed to the structure which either encases, partially or completely, the load as it is being conveyed, or is the supporting surface for the load as it is being conveyed.

SEE OR SEARCH THIS CLASS, SUBCLASS:
657+, 701+, 716+, 836, for particular casings, covers, shields or load supporting surface.

SEE OR SEARCH CLASS:
52, Static Structures (e.g., Buildings), subclass 31 for a housing combined with a conveyor.
299, Mining or In Situ Disintegration of Hard Material and 405, Hydraulic and Earth Engineering, appropriate subclass for mine roof supports.

860.4 Casing with door:
This subclass is indented under subclass 860.3. Apparatus wherein the casing is provided with a portal or opening to permit access to the conveyor inside the casing for repairs, corrections of article or material feed, cleaning, etc., of the conveyor.

860.5 Removable cover overlying the conveyor:
This subclass is indented under subclass 860.3. Apparatus wherein the conveying run of the conveyor has an adjustable or removable covering overlying said conveying run to permit crossing by man or machine, prevent contamination, dust control, or to permit access to conveyor.

861.1 Adjustable conveyor frame or casing:
This subclass is indented under subclass 860.1. Apparatus wherein the conveyor support structure has parts which may be moved relatively.

SEE OR SEARCH THIS CLASS, SUBCLASS:
312+, for a conveyor shiftable mounted on a vehicle.
463.2, 463.3 and 631, for adjustably mounted conveyor which moves for extra conveying function.
535+, for a gravity conveyor system having an adjustably mounted conveyor.
586+, for plural power-driven conveying sections at least one of which is adjustably mounted.

861.2 Conveyor frame or casing flexes or pivots intermediate its ends to move one end relative to the other:
This subclass is indented under subclass 861.1. Apparatus wherein the conveyor support is designed to permit flexing or movement about a fixed axis between the ends of the conveyor to cause the load to travel a linear or nonlinear conveying path.

861.3 Single horizontal pivot axis only:
This subclass is indented under subclass 861.2. Apparatus wherein the conveyor support has movement about a single horizontal axis only to enable the path of the conveyor to change.

861.4 Entire conveyor pivots about horizontal and vertical axes:
This subclass is indented under subclass 861.1. Apparatus wherein the entire conveyor is movable about horizontal and vertical axes to permit the conveyor to be positioned in any inclination to the three orthogenal axes.

861.5 Entire conveyor pivots about horizontal axis:
This subclass is indented under subclass 861.1. Apparatus wherein the entire conveyor is moved only about a horizontal axis only to limit the pivoting of the conveyor to a vertical plane.

861.6 Entire conveyor pivots about vertical axis:
This subclass is indented under subclass 861.1. Apparatus wherein the entire conveyor is moved about a vertical axis only to limit the pivoting to a horizontal plane.

866 This subclass is indented under the class definition. Apparatus not herein before provided for.

867.01 Holder is removable or replaceable relative to drive:
This subclass is indented under subclass 793. Subject matter wherein the load-supporting surface is a conveyor portion which is detachably mounted on either the flexible means, the track means or other stationary or movable means (i.e., drive).

SEE OR SEARCH THIS CLASS, SUBCLASS:
465.1+, for separable load holders.

867.02 Holder grips load:
This subclass is indented under subclass 867.01. Subject matter wherein the load-supporting surface positively holds or attracts the load by friction or by use of a force field, or by a fluid current.

SEE OR SEARCH THIS CLASS, SUBCLASS:
377.02+, for a load holder comprising a gripping element.
470.1+, for conveyor systems using load grippers.
803.3+, for a conveyor section having a load holder with a gripping element.

867.03 Suction gripper:
This subclass is indented under subclass 867.02. Subject matter wherein the load-supporting surface comprises a gaseous medium under subatmospheric pressure to hold the load during conveyance.

SEE OR SEARCH THIS CLASS, SUBCLASS:
377.03+, for a load holder having a suction type gripping element.
471.1, for a rotary or endless conveyors using suction grippers.
803.5, for a conveyor section having a load holder with a suction type gripping element.

867.04 Magnetic or electrostatic gripper:
This subclass is indented under subclass 867.02. Subject matter wherein the force field results from either the attraction or the repulsion of (1) magnetic charges (i.e., magnetism) or (2) electric charges at rest (i.e., static electricity).

SEE OR SEARCH THIS CLASS, SUBCLASS:
377.04, for a load holder having a magnetic or an electrostatic type gripping element.
472.1, for a rotary or endless conveyor using magnetic or electrostatic grippers.
803.6, for a conveyor section having a load holder with a magnetic or electrostatic gripping element.

867.05 Gripper portion biased to load engaging portion:
This subclass is indented under subclass 867.02. Subject matter wherein a portion of the load supporting surface comprises at least two relatively movable portions, one of which is continually urged to the load contacting position by a separate resilient means.

(1) Note. The resilient means could be a fluid.

SEE OR SEARCH THIS CLASS, SUBCLASS:
803.7, for a conveyor section having a gripper portion biased to load engaging portion.

867.06 Gripper portion made of resilient material which is self-biased into engaging position:
This subclass is indented under subclass 867.02. Subject matter wherein a portion of the load supporting surface is made of elastic material which is compressed or deformed by

the reception of the load and is self-urged into engagement with the load.

SEE OR SEARCH THIS CLASS, SUBCLASS:

803.8, for a conveyor section having a gripper portion made of resilient material which is self-biased into engaging position.

867.07 Cam means moves at least one portion of the gripper to a load engaging position:

This subclass is indented under subclass 867.02. Subject matter wherein the load supporting surface comprises at least two relatively movable portions, one of which is moved to the load contacting position by a movable means providing irregular movement thereto.

SEE OR SEARCH THIS CLASS, SUBCLASS:

803.9, for a conveyor section having a gripper including a cam moving at least one portion of the gripper to a load engaging position.

867.08 Holder is adjustable for different sized loads:

This subclass is indented under subclass 867.01. Subject matter wherein the load-supporting surface is attached to the drive means and is adaptable or replaceable to accommodate different sized loads.

SEE OR SEARCH THIS CLASS, SUBCLASS:

473.1, for a conveyor system with adjustable or replaceable holders for different sized loads.

803.11, for a conveyor section having a nongripping load holder adjustable for ifferent sized loads.

867.09 Holder for hollow load contacts interiorly:

This subclass is indented under subclass 867.01. Subject matter wherein the load- supporting surface holds a cavity containing article and the load-supporting surface engages the surface of the cavity.

SEE OR SEARCH THIS CLASS, SUBCLASS:

487.1, for laterally projecting pins which engage the interior of a hollow load in a conveyor system.

803.12, for a conveyor section having a holder for hollow load contacting interiorly.

867.1 Holder formed of non-gripping elements which separate from each other as they pass through a curved path:

This subclass is indented under subclass 867.01. Subject matter wherein the load-supporting surface comprises at least two relatively movable portions which move apart as the load supporting surface travels an outwardly convex path so the load can be inserted or removed therefrom.

SEE OR SEARCH THIS CLASS, SUBCLASS:

484.1, for a conveyor system having nongripping self-opening holders.

803.13, for a conveyor section having a holder formed of nongripping elements which self-open as they pass through a curved path.

867.11 Holder means forms recess to receive or seat load:

This subclass is indented under subclass 867.01. Subject matter wherein the load-supporting surface having a hollow therein which at least partly surrounds an area of a load to an extent which prevents unintended movement other than such movement imparted by the load-supporting surface.

SEE OR SEARCH THIS CLASS, SUBCLASS:

803.14, for a conveyor section having a load holder which forms a recess to receive or seat the load.

867.12 Holder means forms an aperture for receiving load:

This subclass is indented under subclass 867.01. Subject matter wherein the load-supporting surface comprises an opening and the article is at least partially situated within the opening during the conveying of the article.

SEE OR SEARCH THIS CLASS, SUBCLASS:

803.15, for a conveyor section having a load holder which forms aperture for receiving the load.

867.13 Holder has frictional engagement with drive:

This subclass is indented under subclass 867.01. Subject matter wherein the load supporting surface is in frictional contact with the drive.

SEE OR SEARCH THIS CLASS, SUBCLASS:

688.1+, for a conveyor section having a means to enhance the friction or adherence between the conveyor and the load at random locations on the conveyor.

867.14 Holder has positive engagement with drive:

This subclass is indented under subclass 867.01. Subject matter wherein the load supporting surface is secured to the drive by a slippage inhibiting device such as a mechanical fastener or formation (e.g., screw, pin, rivet, tongue and groove, hook) and the slippage inhibitting device exerts a propelling force on the load supporting surface.

SEE OR SEARCH THIS CLASS, SUBCLASS:

698+, for a conveyor section having mechanical fasteners attached to the load-engaging belt for enhancing friction or adherence between the load and the conveyor.

867.15 Holder is attached by a detachable connector to the drive:

This subclass is indented under subclass 867.14. Subject matter wherein the slippage inhibitting device is a releasable securing device.

890 Plural laterally spaced locations fed to or received from a conveyor having laterally movable article supports or pushers:

This subclass is indented under subclass 348. Subject matter wherein a load carrier consisting of two or more load holding members or force exerting means moving along a delivering or transferring path receives loads from two or more sources physically separated from the load carrier and positioned sideways relative to the load carrier and delivers or transfers the loads to two or more destinations physically separated from the load carrier and positioned sideways relative to the load carrier.

(1) Note. Each load holding member or force exerting means is capable of partaking of a motion independent from the other holding members or force exerting means to effect a delivery of the load at a selected destination.

SEE OR SEARCH THIS CLASS, SUBCLASS:

370.02, through 370.06, for a conveyor having movable transfer elements for discharging at selected locations along the conveyor length.

890.1 Laterally moving article supports:

This subclass is indented under subclass 890. Subject matter wherein the load holding members move transverse of the conveyor path.

CROSS-REFERENCE ART COLLECTIONS

950 Art collection of conveyors and structure whereby they may convey a load through an opening in a wall.

951 Art collection of conveyors having specific means for turning cigarettes end for end.

952 Art collection of conveyors having heating or cooling means.

953 Art collection of conveyors having means to convey and untangle springs.

954 Art collection of conveyors having means to handle an overflow load.

955 Art collection of conveyors having fluid actuated, expansible chamber means to move or shift some portions of the conveyor or conveyor system.

956 Art collection of conveyors having flat surface positional adjacent the end of the conveyor or conveyor system which is forcibly contacted by the load and which acts to redirect the load.

957 Art collection of conveyors, wherein significance is attributed to the specific material used to make the conveyor or some part thereof.

958 **LOAD UNITS COUNTER:**
Subject matter having means to count separate articles or batch loads on a conveying means.

959 **WEIGHING:**
Subject matter having means to determine the weight of a load carried upon a conveying means.

END